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COMPUTERWORLD

Third parties grouse over Banyan's GUI plan

By Elisabeth Horwitt
OTTAWA

■ Banyan Systems, Inc.'s promise to roll out Windows-based graphical front ends across its major network services raised red flags among some developers and customers at last week's Association of Banyan Users International meeting.

Even more galling to third-party developers who make a living off such products is that Banyan has indicated that it will give away its Windows-based front ends, according to one user Banyan declined comment on the matter

Key among the services on which Banyan will focus is a Windows-based, icon-driven network management system that is Simple Network Management Protocol Version 2.0-compatible. It is due out by the middle of next year, Banyan spokesmen said

Third-party competition

While conceding that Banyan's existing management utilities are in dire need of an easier-to-use front end, some users criticized the vendor for competing with, and potentially alienating, third-party vendors that already offer similar products

"Banyan's announcements at the conference ... mirror the controversy of why Banyan, despite

Banyan, *page 16*

Top ratings

COMPUTERWORLD BUYERS SATISFACTION SCORECARD

Banyan users gave their product the highest overall score in a LAN operating system satisfaction survey. For results and story, see page 89

SCORE

74	Banyan's Vines
69	Novell's NetWare
66	IBM's LAN Server
66	Microsoft's LAN Manager

Windows revs engine

Workgroup upgrade to get Chicago's 32-bit file system

By Ed Scannell
and Michael Fitzgerald
DALLAS

Microsoft Corp. this week will begin a steady push to replace its best-selling Windows 3.1 by unveiling a follow-up to Windows for Workgroups. The move, however, could face stiff resistance from some OEMs and users who do not see the immediate need for the product's added functionality.

With Windows for Workgroups Version 3.11, which features a 32-bit file system based on the company's forthcoming Chicago operating system, users can for the first time configure the program as either a stand-alone or a networked product

Microsoft officials said such capabilities could eventually obviate the need for Windows 3.1. The product, slated to debut at Networld '93 here, is scheduled to ship in November

"We are working as aggressively as we can to convince as many OEMs as is appropriate to bundle it," said Steve Ballmer, vice president of Microsoft's sales and support group "We may not get it on every machine, but we are optimistic we can move millions of units

Windows, *page 15*

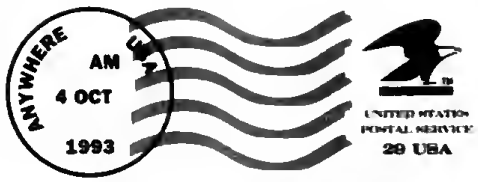
NETWORLD

•SynOptics positions superhubs to usurp routers. *Page 12*

•Digital pushes Pathworks as multivendor manager. *Page 14*

•Novell to market software to aid users' move to NetWare 4.01. *Page 14*

Postal Service Sorts Through Automation



By Gary H. Anthes
MERRIFIELD VA

The U.S. Postal Service is spending billions of dollars to modernize its operations and information systems, but efforts to trim its $50 billion budget have been an uphill battle against soaring labor costs.

Over the past decade the Postal Service has rolled out myriad new technologies, from mammoth machines that read and sort the mail to data networks that carry mail images and experimental neural networks that recognize handwriting. But automating the labor-intensive Postal Service presents an awesome challenge: how to make machines and computers handle 166 billion items a year when no two are exactly alike.

As daunting as the Postal Service's mission is, its automation objective is remarkably simple. "Our core strategy is to sort mail using bar codes," said William J. Dowling, vice president of engineering research and development. "My responsibility is to get bar codes on the mail."

The reason is just as simple: With 682,000 employees, 83% of the postal budget goes to labor. Two people can sort 32,000 letters bearing bar-coded ZIP codes in an hour at a cost of $3 per thousand. Using an older sorter that requires ZIP codes to be

Postal Service, *page 26*

PC Co. backlog stalling sales

By Michael Fitzgerald

The IBM PC Co.'s backlogs, touted by the company as a sign of its strength in the market, are turning into a liability as some users have started to shift orders away from the PC Co. to competitors.

The backlogs stretch beyond the well-publicized shortage of active-matrix color screens that have made ThinkPad notebooks hard to come by. Also in short supply are most models of the low-cost ValuePoint line and some models of the flagship PS/2 family.

The PC Co. backlogs come at a time when competitors such as Compaq Computer Corp. have largely solved their supply-and-demand imbalances.

"We were looking for [PS/2] Model 56s, and we've just bought some Compaqs instead," said Joseph Trickey, PC coordinator at Stratton-Cheeseman Management Co. in East Lansing, Mich. "For IBM it just looked like it's always going to be a month or so, and it's just not worth the wait." Trickey said that in the long term, his company hopes to continue buying from the PC Co.

Things appear no better on the ValuePoint side.

"Our [availability] situation is terrible," said Roy Gregory, manager of personal computing at Serivner, Inc., a $6 billion food

PC Co., *page 10*

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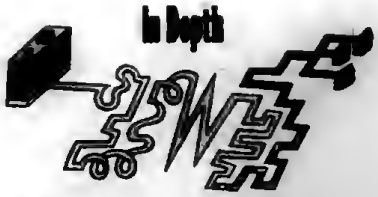
In Depth



CLIENT/SERVER

Breakdown

Welcome to today's client/server, where backup jobs take 22 hours and mainframe and server data don't stay in sync. No wonder 48% of 868 IS managers in a recent survey said their client/server plans are in limbo.

See In Depth, page 107

The truth about

Before you decide what client/server platform is right for you, make sure you know what's true, and what's Not True.

Fact: the OS/2® client/server solution preserves your current hardware and software investment, accessing your mainframes, minis and PCs when necessary and bringing their power and capacity to the desktop level. Fact: the Windows NT™ solution is based on PC servers and desktops and *doesn't* embrace all your existing resources. That could mean porting applications and data. The only plus that offers is the cost of porting *plus* the cost of additional PC servers.

Fact: OS/2 2.1 runs DOS, Windows™ and more than 1,200 native OS/2 applications. With LAN S… or Novell® NetWare,® OS/2 suppo… Windows, OS/2 and Mac clients. F… not likely NT will support all your existing applications. It won't run existing 32-bit applications like WordPerfect® 5.2 for OS/2 and Lotus® 1-2-3® for OS/2. It *will* require additional software to support DOS, OS/2 and even Windows clients. Worse yet, *Infoworld* sources report that Windows 3.x applications run *20% slower* under NT than they do under OS/2 2.1!

▲ *All this monkeying around with NT raises lots of questions. OS/2 has the answers.*

Fact: OS/2 delivers powerful, reliable, client/server applications for data storage and retrieval (DB2/2,™ Oracle 7,® InfoPump™), communications (Communications Manager/2, REMOTE OS,™ TalkThru®), transaction processing (CICS, IMS Client Server/2 V2), comprehensive network management (LAN NetView,® CA-UNICENTER,®

The OS/2 ► client/server solution exploits your existing hardware and software investment. There's No Telling how much the NT solution could cost you.

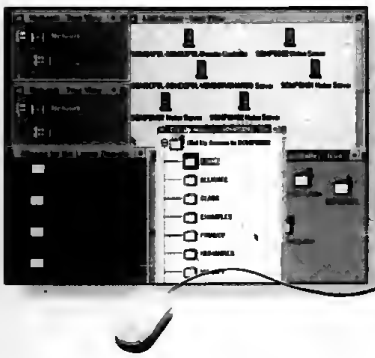
cli**eNT**

Domain/DACS,™ AlertView,™ Foundation Manager™), and more. Fact: The NT strategy is still Not There, and neither are native client/server applications.

Fact: OS/2 is committed to the industry-accepted Distributed Computing Environment (DCE) standards of the Open Software Foundation. Fact: NT is NoT.

▲*Who needs first-generation slipups? OS/2 is second-generation solid.*

Fact: NT still Needs Time to prove itself in the real world. Fact: OS/2 is used by millions world-wide. It's the leading, second generation, 32-bit Intel®-based operating system—a more stable, more developed version of the award-winning March, 1992 release.



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It's time to separate the facts from the fiction...

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Executive Briefing

Don't trust conventional wisdom when it comes to your career. CIOs have often been told that getting close to the center of power (the CEO) is the secret to job longevity. Not true, says Michael Earl at the London Business School's Centre for Research in Information Management. Technical know-how and good relations with peers are much more important than a buddy relationship with the top boss. *Page 84*

Other important don'ts for those who want to get ahead in IS: Don't confuse an outsourcing study with a benchmarking study. The former is geared to comparing costs and looking for the cheapest option, while the goal of the latter should be to measure your operation's effectiveness against the highest standard you can find. *Page 123* And don't give end users more power than they can handle. Some client/server pioneers have found, to their sorrow, that rushing to provide greater access can cause big version control headaches. *Page 111*

IS execs are also grinding their teeth over vendor delays. For instance: **IBM PC Co.'s** backlogs are so varied and lengthy some customers are turning to other suppliers. *Cover 1* Wanna-be-users of **Lotus Notes** are chafing over the fact that versions for Unix, NetWare and Windows NT aren't expected for almost a year. *Page 2* The **Open Software Foundation's** Distributed Management Environment is taking so long to appear that some IS execs are starting to pursue alternate strategies. *Page 85* And companies interested in mobile computing are frustrated by the lack of integrated application development tools. *Page 35*

Can this kind of negative turn into a positive? Sometimes. **IBM** was a late starter in the client/server market with its OS/2 LAN Server, and Version 1.0 was not a knockout product. But Version 3.0 is drawing raves from customers such as the **Atchison, Topeka and Santa Fe Railway**. *Page 43*

Although, they've been waiting for this kind of development for quite a while, firms interested in client/server applaud the ongoing trend toward joint efforts between vendors of host-based tools and client/server tools. The latest collaboration is between host and PC RAD tool specialist **Sapiens International** and client/server player **Smart Star Corp.**, which will unite their development tools to span multiple platforms and databases. *Page 77*

Microsoft to throw Office counterpunch in suite war

By Michael Vizard
SEATTLE, WASH.

Microsoft Corp., which already sells more than half its applications as part of a software suite, plans to rev up its Microsoft Office suite later this month with greatly enhanced upgrades of its word processor and spreadsheet software.

Leading its latest onslaught of applications will be Version 6.0 of its Word word processor and Version 5.0 of the Excel spreadsheet. Both updates will support IntelliSense agents, which automate particular tasks such as formatting documents. Word 6.0 will also support Wizards, prepackaged forms and improved compatibility with WordPerfect Corp.'s namesake word processor.

"This is the biggest upgrade of an application package I've ever seen, and everything seems to work. We're extremely pleased," said John Wolley, a Microsoft Word beta tester who is a technical writer at Indus Group, Inc., a utility software manufacturer in San Francisco.

"It's fundamentally faster, especially for manipulating large amounts of text. The print speed is also much faster," said Daniel Willis, a Word beta user and a lead systems analyst for operating systems, utilities and Intel Corp. platforms at 3M Co. in St. Paul, Minn.

Similarly, beta users of Excel 5.0 report that they, too, are pleased with Microsoft's latest spreadsheet offering (see related story, page 35).

For information systems directors, the most significant element of Microsoft's Office 4.0 will be support for Version 2.0 of Microsoft's Object Linking and Embedding (OLE) interface.

Microsoft will heavily toot the addition of OLE 2.0 support as a competitive advantage over suites from Lotus Development Corp. and Borland International, Inc. OLE 2.0 gives applications a com-

Lotus' John Landry: *Widespread OLE 2.0 support will not happen until 1994*

moo macro language, allows users to call and edit data in another application using that applicatioo's native command format and supports a true drag-and-drop capability across applieations.

In particular, OLE 2.0 will make it more attractive for users to buy suites in order to gain those sophisticated cross-applicatioo functions.

As a result, industry analysts said, the PC software market will evolve from a set of discrete applications to a document-centric model onder which applications are tightly iotegrated (see story at right).

But whether OLE 2.0 sopport will have an immediate effect on buying patterns remains to be seen. "OLE 2.0 will become more important when more than ooe or two applications support it. We expect to see it have an effect startingin the first quarter," Willis said.

Lotus Chief Technology Officer John Landry also downplayed the immediate significance of OLE 2.0 because oot many applications sopport it yet.

"We intend to fully support and exploit OLE 2.0, but right now the only major applications that can nse OLE 2.0 are Excel and Word," Landry said, adding that he does oot expect to see widespread support for OLE 2.0 until sometime oext year.

In the meantime, Landry said, Lotus will cootinue to tout the integratioo of Lotus applications in SmartSuite and the Notes groupware environmeot (CW, Sept. 20). All Lotus applications eurrently support Lotus/FX, an OLE 1.0 implementation formerly known as the Applicatioo Field Exchange that simplifies the exchange of data across Lotus applications and Notes.

In addition, in recent weeks Lotus has been offering customers licensing deals that inelude SmartSuite and Notes, and it plans to formally offer a comhioed SmartSuite/Notes offering sometime next year (see story below).

OLE's suite song

The varied implementations of Microsoft's OLE interface may be the Trojan horse that pushes many information systems organizations to make a wholesale shift to software suites.

As vendors bring on support for OLE Version 2.0, they will entice users to purchase their software from a single vendor with consistent OLE 2.0 implementations across its applications.

"We're already leaning that way because of the desire to have common interfaces across applications. OLE 2.0 will heighten that need because we'll want applications that support the same interfaces," said Daniel Willis, a lead systems analyst at 3M Co. in St. Paul, Minn.

Piecemeal process

Driving this push to standardize on products from a single vendor is the fact that OLE 2.0 consists of more than 400 separate interfaces, which software vendors can implement piecemeal.

As a result, numerous software incompatibilities across applications are likely as one vendor opts to include an OLE 2.0 interface that another vendor has chosen not to support (CW, Sept. 27). Because of these issues, software vendors are going to vigorously push customers to standardize on a particular vendor's OLE 2.0 implementation.

"The days of the software lock-in are back — not that they ever really left," said Norm Weizer, president of Weizer Associates, Inc., a consulting firm in Lexington, Mass.

"There's a perception out there that all OLE 2.0 implementations are going to be plug and play, which they are not," said John Landry, chief technology officer at Lotus.

"This will push people toward suites from a particular vendor. As a software vendor this doesn't bother me, but I'm kind of surprised we haven't heard more noise about it," he added.

Currently, Microsoft seems disinclined to get in the OLE 2.0 compatibility-testing business.

"We're recommending that people use Microsoft Office as a baseline for determining OLE 2.0 compatibility," said Chris Peters, general manager for Microsoft's Word.

—*Michael Vizard*

Notes targets object development

By Michael Vizard
CAMBRIDGE, MASS.

Lotus Development Corp. last week outlined a 12- to 18-month strategy to transform its Notes groupware offering into a set of distributed systems services for building object-oriented applications.

Detailed at the company's annual technology briefing, the plan calls for putting Notes in a position to compete with Microsoft Corp.'s forthcoming Cairo object-orieoted operating system, due in 1995.

The key to unlocking the real poteotial of Notes will be Version 4.0, which is currently expected in the fourth quarter of 1994.

That version will include a substantially improved graphical user interface, support for an object-oriented derivative of the Visual Basic language, called LotusScript, and an event-driven applicatioo development environmeot, codeoamed Notebook, that will span both Notes and relational database systems.

The arrival of LotusScript and Notebook are particularly important for positioning Notes as a distributed environment because Notes curreotly lacks a set of robust developmeot tools. Currently, Notes developers are limited to working with the Notes macro language, templates delivered by Lotus or an applicatioo programming interface written in C language.

Networked Notes

Lotus will announce this week at Networld the NetWare Loadable Module implementation of Notes, expected to provide the fastest server platform for Notes.

Originally scheduled to be deployed this year, the Notebook project has been expanded to become a more robust deployment environment that will support either LotusScript or Visual Basic. Once it is deployed, Notes developers will be able to ereate applications that integrate data from Basic applications, Notes applicatioos and applications typically associated with relational database management systems.

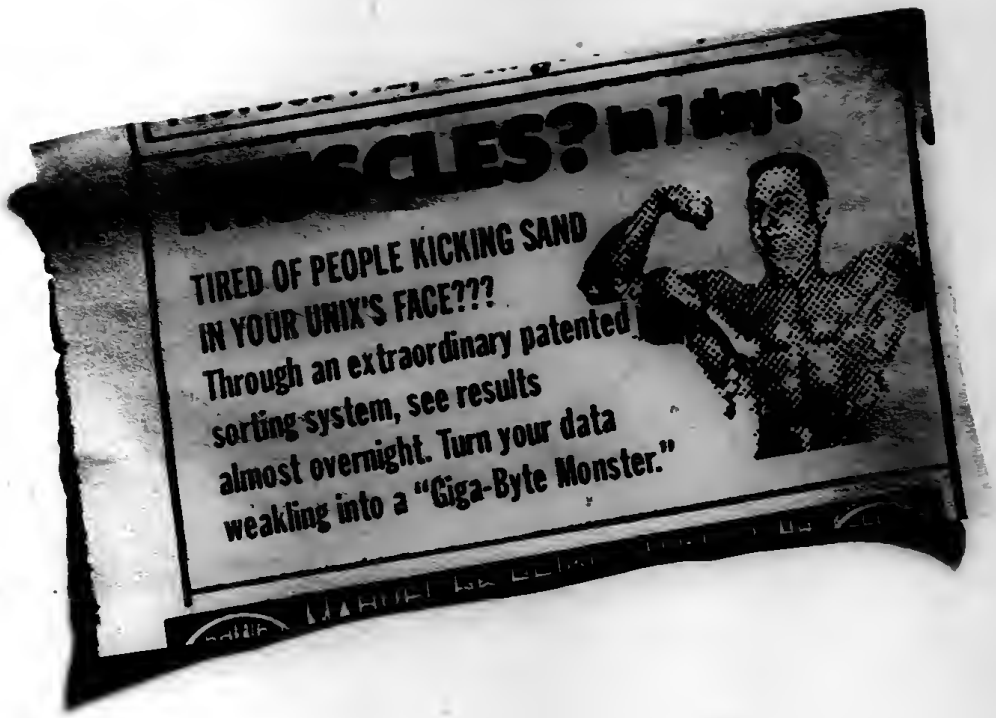
"We have a two- to three-year head start over Microsoft in terms of knowing what it takes to build this kind of a distributed environment," said Lotus Chief Executive Officer Jim Manzi. "We're going to do whatever it takes to build a big industry around Notes for third-party applications," he added.

But right oow, Notes is still limited to a relatively small number of applications at most sites that have adopted OS/2 servers. The widespread delivery of Notes on Unix, NetWare and Windows NT platforms is scheduled to take place early next year (CW, Sept. 27).

"I'm hopeful about the directions Lotus is heading in.... But right oow [Notes] is being held back because it only runs on an OS/2 server. We're looking for either an AIX or NT server," said Greg Shetel, director of systems planning and research at the Oillette Co. in Boston.

The challenge for Lotus is to leverage Notes oo muitiple platforms that will run on OS/2, Unix, Windows NT and NetWare before Microsoft can ereate its Cairo distributed object-oriented environmeot. That effort is expected to start with the layering of Version 2.0 of its Object Linking and Embedding (OLE) interfaces atop its Windows NT operating system.

In contrast, Lotus intends to adopt OLE 2.0 as the storage mechanism for Notes and theo deploy that environment across the heterogeneous installed base of its customers.



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DEC to slash high-end workstation tags

By Craig Stedman
MAYNARD, MASS.

■ Digital Equipment Corp. plans to chop in half high-end pricing on its Alpha AXP workstation line as part of a wide-ranging product introduction next week, sources said. But the company has postponed the rollout of two low-end workstations that were expected to be part of the festivities.

The low-end machines were identified by one source familiar with the company's plans as the DEC 3000 Models 300LX and 300X. The 300LX was expected to use a 150-MHz microprocessor and start in the $5,000 range for a full configuration. Digital's current entry-level model, the 300L, has a base price of $4,995 but costs about $6,500 with a disk drive.

A Digital spokesman would not comment on reports that the two machines were pulled back. But he did confirm that no low-end workstations are on tap next week, noting that Digital was "pleasantly surprised" by the lack of an ander-$5,000 system in IBM's RS/6000 introduction two weeks ago [CW, Sept. 27].

That makes it easier for Digital to wait until early next year to refresh the low-end DEC 3000 models, analysts said. Another Alpha workstation rollout is expected in January, including systems that would use the Peripheral Component Interconnect I/O bus rather than Digital's Turbochannel technology, which should buy the workstations higher throughput.

Terry Shannon, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y., noted that the existing 300L and 300 would only have had six-month life cycles if they were reptaced now, which "would be pretty ephemeral."

But Laura Segervall, an analyst at International Data Corp. in Moantain View, Calif., said Digital could use a better low-end offering to compete more effectively with Sun Microsystems, Inc. as it tries to regain the workstation market share it lost in the last few years.

Cranking it up

Digital's new Alpha AXP workstations and systems are expected to provide faster performance mainly through microprocessor clock speed upgrades

Processor/Speed(s)	Base price
[illegible]	$19,995
[illegible]	$36,000
[illegible]	$10,300
[illegible]	$62,000
[illegible]	$168,000

Note: Server versions start at $21,300 for Model 600s and $41,195 for Model 800s

Source: Digital Equipment Corp.

Thus far, despite Alpha's addition, Digital does not appear to have made much progress, Segervall added. "It's not a turnaround year for them," she said. "They don't seem to have been able to capitalize on the fact that they had the hot box for the year the way [Hewlett-Packard Co.] did" in 1991 and 1992."

Digital is getting much more aggressive at the high end of the DEC 3000 line. Next week it is expected to introduce a version of its Model 500X workstation, to be called the Model 800, that sources said will run 10% faster and start at about $36,000, down from the current 500X base price of $69,995.

The Digital spokesman confirmed there would be "a substantial reduction in the price of the high-end machine." Sources indicated the 800 is expected to offer performance equal to or better than IBM's new Powerstation/Powerserver 58H, which starts at $64,450.

The pricing and throughput capabilities of the 800 and other Alpha-based systems that Digitat plans to unveil (see box) appeal to Frank Brake, director of international operations for technology business development at Newport News Shipbuilding and Drydock Co. in Newport News, Va. "It's bold-stroke stuff," Brake said. The shipbnilder, a major Digitat customer, is considering using Alpha workstations on multiple projects, he added.

Steve Ruger, MIS manager at Smith Industries Ltd., an aerospace company in Malvern, Pa., said he had planned to hold off on buying a DEC 4000 midrange system until next spring. But new 4000 models due out next week "will almost certainly drive me back into the market," he noted.

However, Matt Holdrege, senior network specialist at PacifiCare Health Systems, Inc. in Cypress, Calif., said PacifiCare will still likely wait another year before moving to Alpha. "We want to see the technology become mature, and we want to see more third-party support," he said.

Preoccupation

Digital will have a lot on its mind next week. Besides the new Alpha AXP systems, it is slated to introduce a groupware package called LinksWorks and a new version of its object-oriented ACA Services software, renamed Object Broker, that integrates Microsoft Corp.'s Object Linking and Embedding protocol with the Object Management Group's Common Object Request Broker Architecture. Digital will also detail Version 2.0 of its DEC OSF/1 operating system and discuss plans for adding symmetric multiprocessing and clustering support to DEC OSF/1, though those capabilities will not appear until 1994. Several layered software programs for OSF/1 are also due to be added as part of a renewed effort to become a factor in the commercial Unix market.

Open systems

Conference to test COSE's workability

By Jean S. Bozman
SAN JOSE, CALIF.

The first tangible evidence that the 7-month-old Common Open Systems Environment (COSE) is working could come later this month, when the Unix "dashboard" is shown at COSE's Common Desktop Environment (CDE) conference here. CDE's consistent look and feel is intended to unite the vendors' Unix desktops as a foil against Microsoft Corp.'s Windows NT.

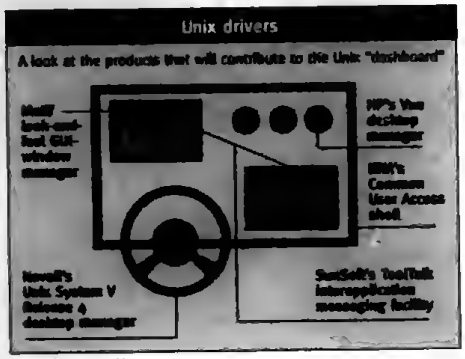
Users at the conference, slated to take place Oct. 26-28, cannot expect to take away a finished product, said CDE conference chair Josina Arfman, a program manager at IBM's Advanced Workstation Systems headquarters in Somers, N.Y.

"What they walk away with is not production code, but early developers' release code," she said. "It is a proof-of-concept they can take back with them to play with and see where it fits in their environment."

Several users who said they will attend the conference want to use CDE to unify the look of existing Unix applications as they play on different vendors' computers at their sites. "We're trying to bring together all of the different hardware platforms under one presentation," said Neal Mackanic, a computer programmer who works at the Lawrence Livermore National Laboratory's energy-research supercompoter center in Livermore, Calif.

Unix drivers

A look at the products that will constitute to the Unix "dashboard"



Source: Computerworld

Software development kits will be distributed to attendees on CD-ROM disks. But the developers will eventually buy finished CDE tool kits adapted for a specific Unix platform from COSE vendors. CDE products are expected to ship sometime in the first half of 1994, COSE said.

COSE's task of unifying Unix will not be done as easily as grafting together the pieces of CDE, industry analysts said. Even so, that work may not be completed until December, as bits and pieces of COSE vendors' desktop products are woven together (see chart). Other COSE activities are at less advanced stages, including working groups on federated naming, networking and systems management.

Will they integrate?

Industry analysts said they are curious to see the degree of integration between the various CDE compuents.

"Most of the Unix vendors are not committing to deliver anything before the middle of 1994," said Rikki Kirzner, a principal analyst at Dataquest, Inc. in San Jose, Calif. "The [independent software vendors] can't do anything until then, so the [CDE] software development kit will let them get started early. They can get in the right ballpark, so that by the time the version npgrades come out, they won't have that much work to do."

The five vendors that formed COSE in March — IBM, Hewlett-Packard Co., The Santa Cruz Operation, Novell, Inc.'s Univel (now part of Novell's Unix Systems Group) and Sun Microsystems, Inc.'s SunSoft, Inc. — cooperated to create the unified Unix dashboard [CW, March. 22].

Corrections

•Due to an editing error, the IBM group responsible for ImagePlus software was misidentified [CW, Sept. t3]. The Software Services Division (formerly Programming Systems) handles that prodnct line.

•Due to a reporting error, a story in the Sept. 27 issue on Novell, Inc.'s intent to trademark its Unix System V Release 4 code through X/Open Co. incorrectly identified Ronald Bell, chief technology officer at Unisys Corp.

•The CW Guide to Sales Force Automation [Sept. 20] listed a wrong number for The Perera Group'n sales antomation workshops. The number is (617) 26t-0112.

•Due to a reporting error, the telephone number for Lysis Corp. was incorrectly listed in the Sept. 13 issue. Lysis can be reached at (404) 373-3359.

A picture is worth a ~~thousand~~ 25,000 lines of code.

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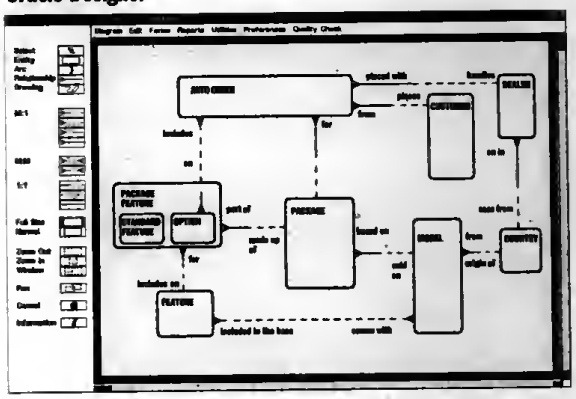

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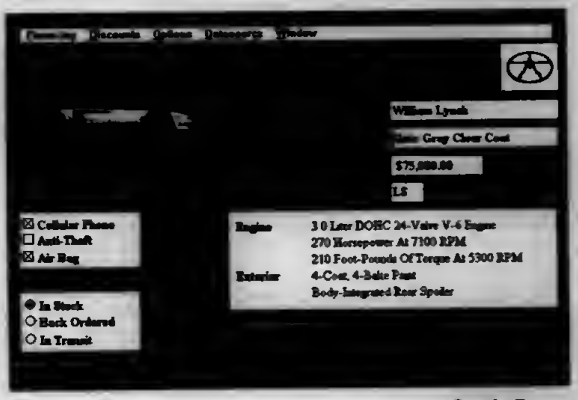

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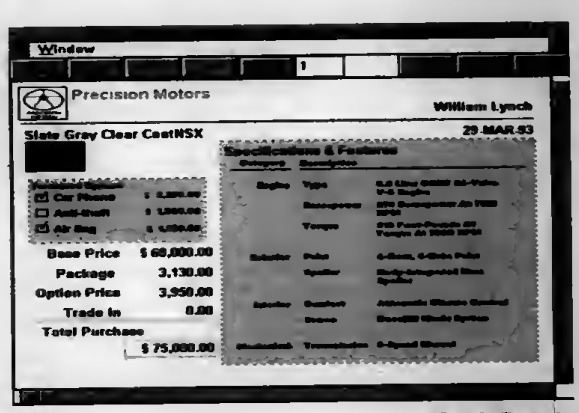

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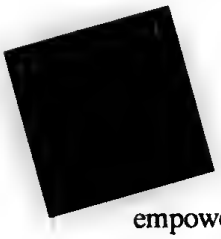

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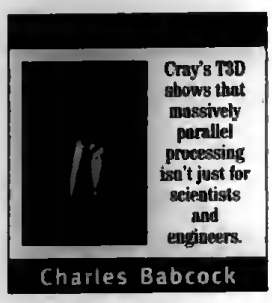
Two Cray workhorses harnessed in tandem

Cray Research, Inc. unleashed a super attack on the bottlenecks of parallel processing with the unveiling of the Cray T3D in Washington last week. The T3D may one day be viewed as the engine that pushed massively parallel processing out of the scientific/engineering trenches and into the mainstream.

The T3D closely links a parallel processor to a Cray C90 vector supercomputer. Together the two architectures gobble up tasks that neither would consume as efficiently on its own. The approaches address different types of problems, says Christopher Willard, manager of high-performance technology at International Data Corp. in Mountain View, Calif. Willard formerly oversaw wind tunnel computational fluid dynamics using supercomputers at the NASA/Ames Research Center in Moffet Field, Calif.

A massively parallel system is most effective when a task can be separated into parts with associated data. Parallel systems make use of lots of cheap microprocessors, each with its own memory, instead of having a centralized pool of memory. Hence, data is likely to be spread throughout the system along with the CPUs. If there is a high degree of cross-dependence on the data, then a parallel system will incur overhead as one processing element tries to communicate with another — a condition known as latency.



Cray's T3D shows that massively parallel processing isn't just for scientists and engineers.

Charles Babcock

A vector system, on the other hand, is a kind of sharply focused assembly line, executing the same operations on large sets of data, such as multiplying every element of an array by 12 and then adding up the results. Because a vector system operates from a common memory pool, the need for data independence is lessened, but vector processors work their wonders on a relatively limited number of tasks.

Problems of computing atmospheric effects or flow dynamics in auto or aerospace design are frequently a mix of both tasks, but previous attempts to harness parallel and vector processors have been kludgy at best. With the T3D, Cray's supercomputer operating system, Unicos, runs on the C90 and a microkernel of Unicos runs on each parallel processor, sharing the load.

With the T3D, programmers who have struggled in one realm will have the chance to test their applications, subroutine by subroutine, in another and find the combined approach that works best.

Cray, which makes its entry into the massively parallel market with the T3D, brought supercomputing packaging to parallel processing design. The T3D name stands for a three-dimensional torus, or ring. Cray took a two-dimensional matrix of processing elements and closed its dangling end wires into a ring. The ring shortens the distance between the outermost and innermost processors, shortening message path lengths. As a parallel design, the T3D is "most elegantly engineered," says Gary Smaby, president of the Smaby Group market research firm in Minneapolis.

Cray built supercomputer-style switching into the processor interconnections, allowing messages to move bidirectionally at 300M bytes per second. The result is high bandwidth and low latency with a gain in performance.

Although the T3D is made from 32 or more Digital Equipment Corp. Alpha microprocessors, it is still a supercomputer and still entry-level-priced in Cray's $2.2 million to $7 million range.

But there's no reason why some of the rapid gains the T3D represents couldn't be mapped to less pricey versions of a massively parallel/vector processor built from SPARC, Intel, Precision Architecture or PowerPC microprocessors. Cray may not wish to execute all these versions, but in perhaps three or four years, other suppliers of parallel systems can start mimicking the Cray approach and make less expensive combinations available.

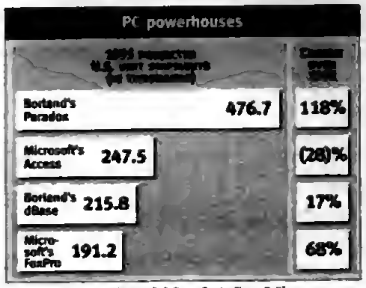
Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737

Borland database plans puzzle users

By Michael Vizard
LAKE BUENA VISTA, CALIF.

Sorting through the myriad of database strategies used by Borland International, Inc. should become more complicated following the addition of object-oriented extensions to the XBase language for dBase IV for Windows in 1994.

Borland is committed to a dual database strategy for Windows that focuses on Paradox and a forthcoming version of dBase IV for Windows, due in the first half of 1994. That version



Source: Computer Intelligence/InfoCorp, Santa Clara, Calif.

of dBase will include several object-oriented extensions to the standard XBase language now employed by dBase IV developers, company officials said.

However, Borland has already deployed Paradox for Windows, which includes an object-oriented language, called ObjectPal, that supports both Paradox and dBase IV file formats. As such, many dBase customers who are looking to move to Windows before 1994, are evaluating Paradox as well as rival offerings from Microsoft Corp., Computer Associates International, Inc. and Software Publishing Corp.

The challenge facing Borland is that while ObjectPal is a robust object-oriented language, it has little in common with the Pal language Borland used in Paradox for DOS. That has made the migration a rough road to travel for experienced users who attended the Paradox users conference here last week.

"They've given elements in ObjectPal with similar functions to the ones in Pal the same name, but they're totally different. You have to rewrite everything in ObjectPal," said Eric Grau, co-owner of EMG Consulting in Niagara Falls, Ontario.

Another challenge facing information systems departments is that ObjectPal is not compatible with other applications beyond Paradox dBase, which eliminates the ability to leverage skills across multiple applications. In contrast, alternatives such as Microsoft's Visual Basic and CA's Visual Objects work with multiple products.

Borland has had continual problems moving its Pal users smoothly over to the object-oriented version. Users report that experienced Pal programmers find their old habits a handicap when learning a new way of programming.

"If I had never known Pal, I think ObjectPal would be easier to learn," Grau said.

"People are just now beginning to tap into ObjectPal. They haven't really changed the way they think about programming in Paradox. They're still using Pal techniques in ObjectPal, which means you can build applications faster but you're not getting the full potential out of the language," said Greg Salcedo, a co-owner of Para/Matrix Solutions, Inc., a consulting firm in Kent, Wash.

Revised Borland C++ tools add flexibility

By Melinda-Carol Ballou

With a planned new version of its 16-bit C++ tools, Borland International, Inc. is preparing the way for 32-bit development and deferring to the ubiquity of Microsoft Corp.'s Visual Basic.

Dubbed Borland C++ Version 4.0, the 16-bit tool set will offer support for Visual Basic's VBX custom controls, along with a migration path to 32-bit environments.

Borland is beta testing this next generation of C++ tools for 16-bit environments. It is expected to ship them next month at the same time as its recently debuted C++ for Win32 32-bit tools, according to sources close to the company.

Key to the new version will be the portability of the 16-bit applications created with Borland's C++ for Win32, along with exception handling and support for Object Windows Library (OWL) 2.0, the sources said. The 32-bit support will offer developers the ability to make the transition as 16-bit programs run out of juice and as higher-performance hardware and 32-bit operating systems become widespread.

Also available with Version 4.0 of the 16-bit tools is an enhanced and user-configurable Integrated Development Environment with support for visual programming, the ability to use and create custom controls for Visual Basic and an enhanced object browser.

Industry analysts said support for the popular Visual Basic controls will allow developers to extend their work on Visual Basic into Borland's C++ environments when they require more robust capabilities. Microsoft already offers such C++ support for Visual Basic controls with its own Visual C++ tools. This support allows developers to create extensions to functions or plug in existing VBX controls, which are predefined pieces of functionality that save programming time.

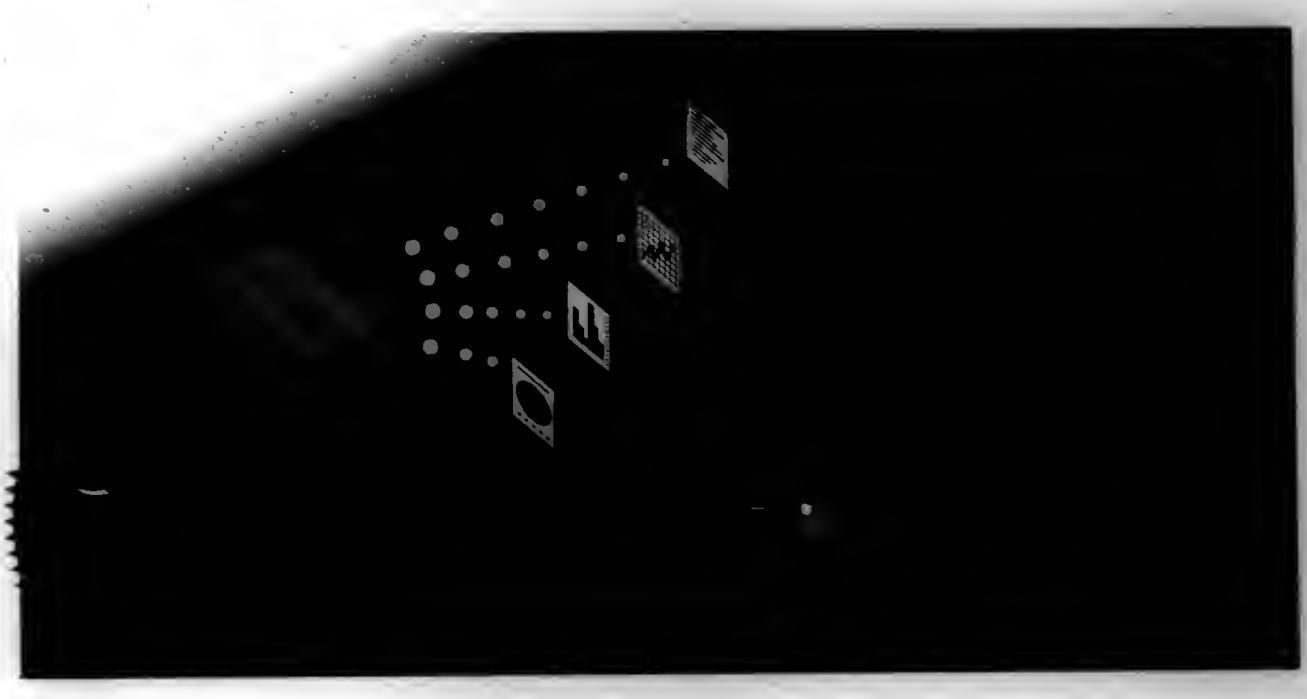
Upbeat views

Beta users spoke positively about the portability and greater flexibility of Version 4.0.

"Although we have no pressing need for 32-bit [capabilities] right now, we want our 16-bit code to be able to go forward when we need it to," said Frank Imburgio, project leader at Dean Witter, an investment firm in New York.

He added that OWL 2.0 will no longer be compiler-specific because it will offer support for a new C++ template as opposed to specialized Borland dispatch functions. It will also provide higher-level functionality to manipulate parameters and multiple document interface support.

Borland has not yet decided whether it will offer the development tools as two separate products — as Microsoft does with its 16-bit Visual Basic and Visual C++ — or whether it will package them.



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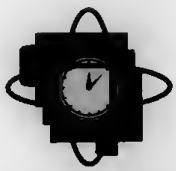

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News Shorts

IBM confirms sting reports

IBM confirmed a report last week that it had experienced extensive theft and fraud in its warranty operations and had conducted a sting operation in conjunction with the **Federal Bureau of Investigation**. While refusing to confirm that fraudulent parts returns may have cost the company hundreds of millions of dollars, an IBM spokesman said that during the last 18 months, "IBM has dramatically tightened up its processes in the wake of this. . . . This is not something that is happening now."

U.S. to ease export restrictions

The federal government said it will drastically reduce restrictions on computer exports. If fully implemented, the plan will free $35 billion worth of computers for exporting, the **U.S. Department of Commerce** said. The administration said it will immediately raise the threshold below which computers can be freely exported to most countries from the current 12.5 million theoretical operations per second (Mtops) to 194 Mtops, about three times the power of Intel Corp.'s Pentium microprocessor [CW, Aug. 23]. Mtops is a government-devised measure of processing power. The administration said it will then seek a multilateral agreement with U.S. allies to boost the threshold to 500 Mtops. Vendors hailed the move as a sign that the administration is serious about the U.S.' high-tech competitiveness.

Encryption exports investigated

A federal grand jury is investigating the export policies of two software companies in a case that could have far-reaching repercussions for international software distribution worldwide. **ViaCrypt** in Phoenix and **Austin Code Works** in Austin, Texas, are being investigated for their foreign distribution plans for PGP, a data encryption program, according to an assistant U.S. attorney. The **National Security Agency** has supported strict controls on the export of data encryption products, citing national security. However, organizations such as the Software Publishers Association said such laws cost U.S. firms millions of dollars a year in lost sales.

CA wins infringement suit

A seven-member jury in the U.S. District Court in Denver has awarded **Computer Associates International, Inc.** $10 million in damages in a 1986 lawsuit it filed against **American Fundware, Inc.** for theft of CA's trade secrets. The action stemmed from a 1979 agreement between **Stuart P. Orr & Associates** and **Steamboat Computer Services**, in which Orr & Associates had agreed to license its software code and accounting functions to Steamboat. The jury found that Steamboat, which has since become American Fundware, had illegally used the code for its own accounting software without paying royalties to Orr, which CA acquired in 1983. American Fundware said it is considering an appeal. A CA request for an injunction against sales of American Fundware is pending.

EMC enhances RAID products

EMC Corp. in Hopkinton, Mass., last week announced enhancements to its Symmetrix Integrated Cached Disk Array 4000 and 5000 series storage products. EMC added an optional Enhanced Channel Adapter feature, a parallel channel storage director, to the Symmetrix 4800. EMC also added a Hyper-Volume Extension, comparable to a solid-state disk, to the Symmetrix 5500 and announced that the 5500 now supports connections to multiple IBM ES/9000 environments.

More news shorts, *page 16*

Apple groupware draws near

Client software debuts this week

By James Daly
CUPERTINO, CALIF.

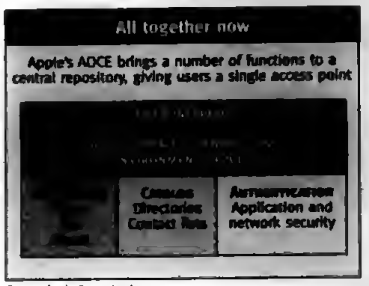
Apple Computer, Inc. will tease Macintosh users with a taste of collaborative groupware capabilities this week when it finally unveils the first pieces of its long-awaited Apple Open Collaboration Environment (AOCE).

AOCE is a set of application programming interfaces (API) that promise to tie the loose strands of voice mail, fax, electronic mail and remote paging into an integrated communications fabric. Developers will be able to tap into the power of the extension simply by hooking into AOCE APIs.

Apple will dribble out most of the key portions of AOCE in the next six months. PowerTalk, the client half of AOCE, will be available immediately with System 7 Pro, a $149 system software package that adds system extensions such as Quicktime as well as communications features that heavily networked corporate Macintosh users need.

However, the $999 PowerShare Collaboration Server package, which will centralize management of the AOCE services, will not ship until December or January. A 10-user multipack of System 7 Pro will sell for $999.

The AOCE offerings are Apple's first stab at the type of interactive groupware capabilities provided in products such as Notes.



Source: Apple Computer, Inc.

While user enthusiasm for AOCE remains high, the particulars have already drawn some complaints. Topping the list is cross-platform capability, which will not be available for at least six months. "I love the idea, but they don't have all the pieces in place yet," said Nancy Tresnak, a project manager at Sprint Corp. in Kansas City, Mo.

Hold your horses, Apple officials said. "A race is not over as soon as you say ready-set-go," said Gursharan Sidhu, director of the Collaboration Products Group at Apple. "We still have a ways to go with this, but it's a start."

Until those cross-platform capabilities are added, users will have to maintain transport and delivery services on other platforms.

Even with these shortcomings, collaborative computing is where users want to go. Marcello Gallardo, a test specialist at Princeton University, said he could envision an AOCE in which professors could mail lecture changes or course additions to every student. Such updating is very difficult now because of the wide variety of E-mail packages students use.

Kirk Loevner, vice president of AppleSoft Products, said the firm is looking into preinstalling System 7 Pro on some Apple high-end Macintoshes but exactly which ones has not yet been decided.

System 7 Pro will also include a mail feature that will allow developers to add E-mail functions to applications through a mail header that offers drag-and-drop fields as well as a feature to attach digital signatures to documents.

SNA over LAN scheme starts to take shape

By Joanie M. Wexler
RALEIGH, N.C.

Vendors at last week's Advanced Peer-to-Peer Networking Implementors Workshop put aside their political agendas and nailed down technology goals and delivery timetables for Data Link Switching (DLSw), the emerging industry-standard scheme for blending IBM protocols onto LAN internetworks.

The consortium of participating companies, including major router and IBM host connectivity vendors, put DLSw on a track for a standard SNA-in-IP encapsulation scheme well-defined by February and signed off in October 1994.

"The group made a lot of progress, and a lot of controversy was resolved," said Robin Layland, principal at Layland Consulting in West Hartford, Conn., who attended the event.

For example, Layland said, one development was an about-face on bundling NetBIOS protocols into DLSw. NetBIOS support was moved out of the required base set of functions and into the optional category.

For users, this means that if a vendor claims to support DLSw, that does not necessarily include NetBIOS, Layland explained.

The group also came up with important flow control schemes that keep remaining active communications sessions humming if one goes down. For example, if several SNA devices mapped to the Internet Protocol are communicating to a remote location and one session dies, the scheme will see to the integrity of the others.

Patent problems

However, the omnipresent IBM patent issue reared its head once again during flow control discussions. IBM holds so many general patents that it would be difficult for vendors to implement any scheme that would not infringe on them and cost them, and their customers, more money to blend heterogeneous networks.

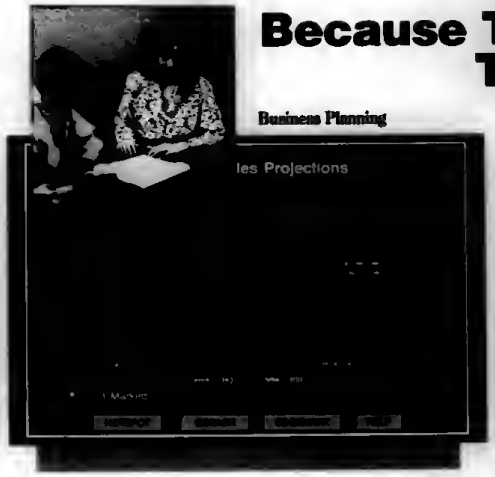
IBM is reportedly checking with its lawyers and will report to the group in one month as to whether it would waive patent fees.

Another new feature added to DLSw will allow like devices at either end of a connection to exchange vendor identifications, allowing customers to automatically take advantage of those devices' proprietary "extra" features, Layland said.

The vendor ID capability benefits users who want features that transcend the standard and is an incentive for vendors to be innovative with their products. However, "this does put a push behind proprietary technology," Layland said.

From a multivendor interoperability standpoint, IBM said it would revise its DLSw specification filed with the Internet Engineering Task Force to include more of the functions its 6611 router does today with DLSw, said Lori Dreher, a senior product manager at router maker Wellfleet Communications, Inc., who also attended.

David J. Berman, Wellfleet's director of IBM networking, said this is good news because "we have huge requests in financial accounts to interoperate with 6611s." IBM contributing more of its DLSw idiosyncrasies means "we'll be more likely to successfully work with the 'real' 6611," he said.



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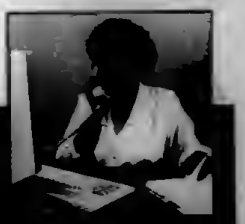

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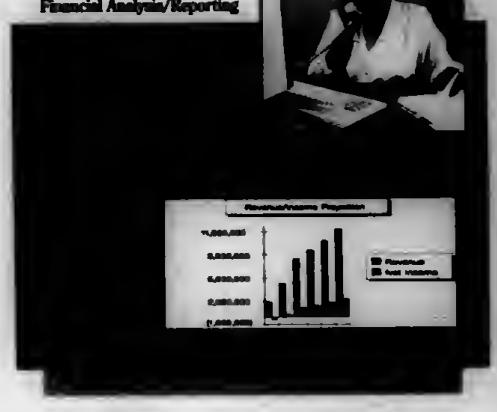

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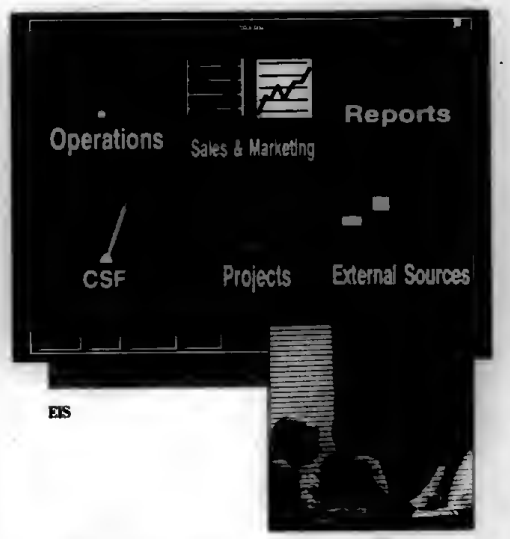

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Data Visualization

IBM PC Co.

CONTINUED FROM COVER t

wholesaler in Oklahoma City. Gregory said he was "having real difficulty getting ValuePoints" and was buying PCs from Compaq and NCR Corp. instead.

Major resellers also noted that frustrated customers are starting to jump ship from the PC Co.

"Typically, clients are very reloctant to change once they focus in on a particular standard, but what we are seeing now is clients coming back to us to see what equivalent products [to specific IBM models] we would recommend," said Alan Hald, vice chairman of MicroAge, Inc. in Phoenix, which resells botb IBM and Compaq products. Hald said this was not the case six months ago.

Bruce Claflin, president of PC Co. Americas, said that "We do deserve a stick in the eye" over continued supply problems, but emphasized, "the majority of orders we have right now we will mostly fill in the fourth quarter and first quarter of next year."

Anticipated delivery time of backlogged IBM PCs

	ThinkPad 350 (color)	ThinkPad 750 (color)	ValuePoint 2 (486DX)
IBM PC Direct	6 weeks	1 year	2 weeks
Computer City (Fort Worth, Texas)	Data not available	Data not available	1 to 1½ weeks
Micro Center (Columbus, Ohio)	Indefinite	Indefinite	2 to 3 weeks
Microage (Durham, Mass.)	On back order for eight weeks		Data not available

Claflin said ThinkPad demand will exceed supply "well into" t994, despite plans to more than double shipments. He said the company would catch ValuePoint demand in the fourth qoarter, but that PS/2 would probably slip into the first quarter.

Claflin said PS/2 coostraints were caused in part by dynamic RAM shortages and difficulty in getting some Micro Channel Architecture components.

Richard Zwetchkenbaum, an analyst at International Data Corp. (IDC) in Framingham, Mass., said IBM is "failing to capitalize on a market opportunity."

IDC expects the PC Co. to ship 4.3 million units in 1993, a 35% increase over 1992 but less than it could have shipped. An IBM spokeswoman said officials believe shipments could have grown 50% if the company had been able fo meet demand.

Users now boast aboot wheo they actually get PC Co. products, particularly the color ThinkPads. "We got [a ThinkPad] recently in seven to eight weeks, rather than in the t5 to 20 weeks we were expecting," said Bruce Linker, vice president of information systems at a financial services company in New York. Linker attributed his good fortune to a cootact with the ability to pull strings.

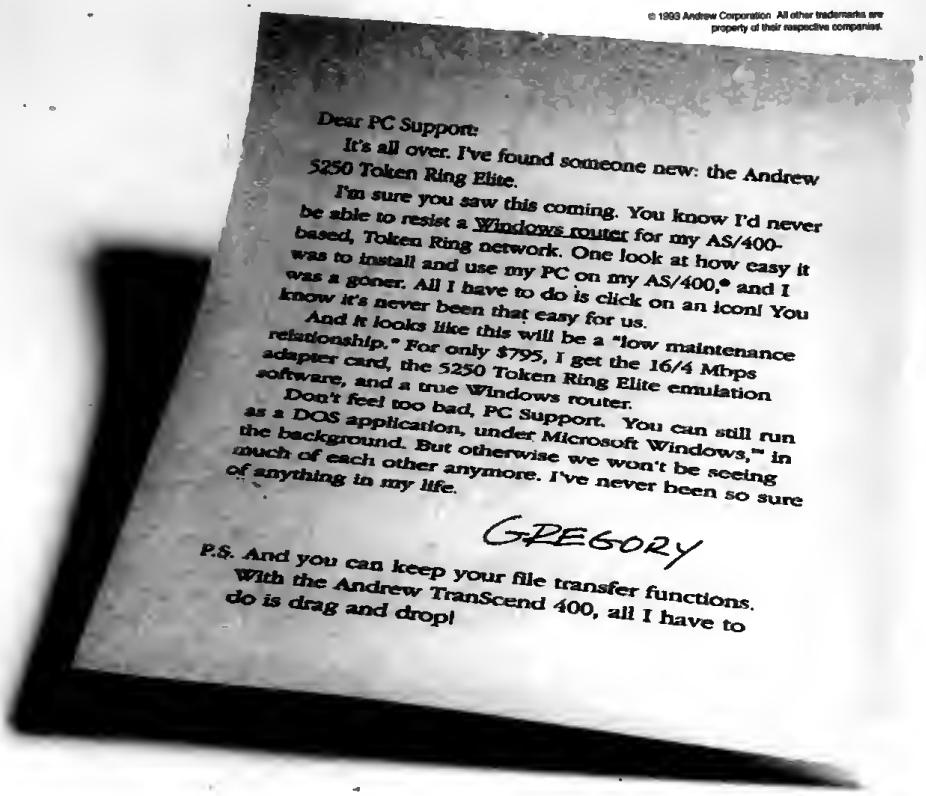
Playing favorites

The PC Co. does appear to be taking care of its most-favored customers, however, particularly those in its new Premium Partoers program [CW, Sept. 9].

"We're oot having supply problems," said George Oliver, manager of information delivery technology at the Royal Bank of Canada in Torooto. Royal Bank is not a Premium Partoer, but it is a major IBM account.

An internal CompuCom Systems, Inc. memo obtained by *Computerworld* went so far as to instruct field sales representatives to "Please move your [backordered IBM] orders over to [Compaq] and begin filling those back orders."

Phillip Wise, CompuCom's executive vice president, downplayed the memo, saying it was written by an aggressive assistant buyer and in oo way reflected a corporate directive. But Wise added that the PC Co. has "pretty sizable backlogs" and that his IBM boying team had prepared a 40-page document on how customers could achieve Premium Partner status, or how to move their demand over to the ValuePoint product line.



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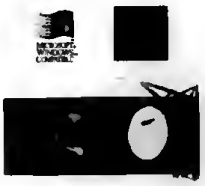

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GSA Contract Number GS00K93AGS6403.

'Superhubs' invade router turf

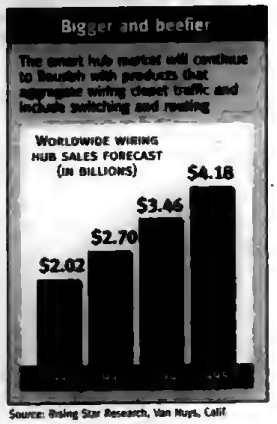
By Joanie M. Wexler
DALLAS

A new era in backbone networking will officially kick in at this week's Networld '93 show here with the formal debut of SynOptics Communications, Inc.'s intelligent "hub of hubs" and corresponding network management system.

SynOptics last week publicly described its System 5000, the first of several expected hub rollouts targeted at usurping routers as the cornerstone of backbone networks.

These mammoth hubs will aggregate wiring closet traffic from across corporate computing enterprises and will ultimately bundle in routing and high-speed switching to accommodate quickly proliferating enterprise networks.

The fusion of these functions is important because "users are looking for enterprise integration" to get a managerial grip on distributed computing environments, said Todd Dagres, vice president of data communications research at The Yankee Group in Boston.



Source: Rising Star Research, Van Nuys, Calif.

No more sharing

Also, he noted, companies are looking to migrate from shared to switched networks, which requires simultaneous support of routing, switching and packet-to-cell conversion technologies to protect existing investments.

Users are moving to switching because it builds in configuration flexibility that prevents them from continually adding hubs as their networks grow, Dagres said. He was referring to switching's inherent ability to let users build "virtual" networks, which give them the freedom to "move" resources among networks with a mouse click rather than recabling.

Users said such capabilities, evident in the SynOptics box and expected to emerge in the next six months from rivals Cabletron Systems, Inc. and Chipcom Corp., are important.

"Allowing us to create a logical network" through SynOptics' Optivity 4.0 management system and the System 5000's Asynchronous Transfer Mode (ATM) switching is a major benefit to SynOptics shop Cargill, Inc. in Minnetonka, Minn., said Loreo Sinning, a network specialist.

On the other hand, Sinning said, bundling routing into hubs — a philosophy SynOptics ping-ponged about last week — is not important to Cargill.

Heavily invested

Early in the week, Mark Hoover, SynOptics' director of systems architecture, discarded the notion of integrated routing on the premise that "most people have already invested in routing technology and aren't looking to reinvest," a rationale Sinning echoed.

However, a day later, the company acquired high-end router company Coral Networks, Inc. (see story page 131) and said it will blend that technology into its hub line.

This is a positive about-face for Presbyterian Healthcare System, a SynOptics shop based here. "Internal to the hub, I would like to link an Ethernet to a FDDI," said Mel Lively, a network manager, who currently links dissimilar LANs through an external bridge.

"Internal internetworking should be cheaper and faster, and the simpler you make something, with fewer components, generally the more reliable it is," he said.

Meanwhile, Chipcom said it has a new platform coming in the first quarter of next year that adds cell switching. Dave Fowler, vice president of marketing, said that before the end of the year, Chipcom will have an ATM switch in its existing hub.

Cabletron said it will introduce a new platform early next year sporting built-in internetworking, distributed management across each hub module and fault tolerance.

Hub-ba hubba

Switching hubs, subsets of the "master hub" concept, will receive heavy attention at this week's Networld show, and some of the top players will add product accoutrements.

For example, San Jose, Calif.-based Alantec Corp., which combines LAN routing and switching in its wiring hubs, will begin routing Apple Computer, Inc.'s AppleTalk protocols, said Paul Schaller, vice president of marketing.

Alantec will also tag on support for Fiber Distributed Data Interface over single-mode fiber, pushing the 100M bit/sec. LAN distance from two to 20 kilometers. It will also add the Simple Network Management Protocol "set" feature.

Aside from hub activity, remote access into LANs promises to be a big showstopper. For example, IBM will premier its 8235 dial-in server, which supports Ethernet, Token Ring and eight modem ports, said Laura Knapp, senior systems program advisor.

The product, which is the first fruit of IBM's weeks-old relationship with Shiva Corp., resides at the host site, allowing remote PC users of DOS, Windows or OS/2 clients running TCP/IP, Novell, Inc.'s IPX or IBM's NetBIOS or SNA to dial into the home network and "access everything they could normally access," she said.

A separate IBM networking group is expected to finally announce the product version of its OS/2-based remote access software, long code-named "Thunderbird." The product will come optionally bundled with serial I/O controllers from Star Gate Technologies, Inc. in Solon, Ohio, and will go on sale next month, according to an industry source.

— Joanie M. Wexler

Wide-area networking

NetWare module expands network management view

By Joanie M. Wexler

■ With a little help from a friend, Novell, Inc. opened the door last week for NetWare administrators to embark on the task of wide-area bandwidth management.

A joint product rollout with telecommunications equipment maker Motorola Codex, Inc. in Mansfield, Mass., has spawned the first wide-area network (WAN) NetWare Loadable Module (NLM) for the NetWare operating system, the vendors said. The goal is to extend LAN administrators' management view across enterprisewide private networks.

The NLM, dubbed "WANvisible," comes bundled for free in NetWare for Branch Office Solutions, or it can be downloaded at no cost from NetWire, the worldwide Novell bulletin board service.

WANvisible works in concert with the 3512, a $2,395 Codex-built data service unit (DSU) announced last week. DSU translates LAN packets into a form that can be transmitted over wide-area links.

WANvisible also runs with Codex's V.fast-with-compression modem announced several weeks ago.

"The whole concept of allowing a DSU to be managed by Novell is a strategic coup," said Robert E. Willis, president of Alpine Computer Systems, Inc., a Novell reseller in Hollistoo, Mass.

He said the move gives him "a low-cost way to set up branch office applications for customers where the communications translation gear doesn't outprice the file server."

NetWare visibility
WANvisible and the Codex 3512 today will allow WAN management on a NetWare console in a window separate from the LAN environment.

NetWare administrators can use the products to determine not only that there are WAN problems but also whether they are in the DSU or in the link itself — a general WAN management hurdle today, said Dave McNamara, director of marketing at Motorola Codex.

What this solves for the Novell administrator is, "'I don't want to have to run to the telecom guy every time there's a problem. Why can't I manage the WAN off the server myself?'" explained Joe Noel, director of networking research at Dataquest, Inc. in San Jose, Calif.

Similar capabilities do exist today. For example, Enron Gas Services Corp. in Houston runs an NLM with a hardware board from Newport Systems, Inc. that "puts a V.35 modem interface into a Novell server and plugs into a DSU to route [Novell's] IPX and [Apple Computer, Inc.'s] AppleTalk over a WAN link," said Jim Queen, director of enterprise networking.

However, he added, the Novell/Codex gear "might give more reporting and diagnostics on the WAN side, so I'd be very interested in looking at it." Because Enron is using DSUs from another vendor, however, Queen said he would be more likely to try out the 3512 and WANvisible in new installations.

Compression inside the Codex 3512 and V.fast modem allows users to squeeze 256K bit/sec. speeds out of their 56K bit/sec. dedicated lines — the most widely installed private link speed, according to Dataquest.

Gerry Machi, vice president and general manager at Novell, estimated that users could save about $14,000 to $21,000 per year at 56K bit/sec. speeds, depending on the distance of the circuit.

In addition, Machi said, a multiplexer within the 3512 lets users divvy up a private link and dedicate bandwidth to point-to-point-oriented SNA traffic and another channel to broadcast-oriented LAN traffic so that users can combine legacy and distributed networks on to a common backbone.

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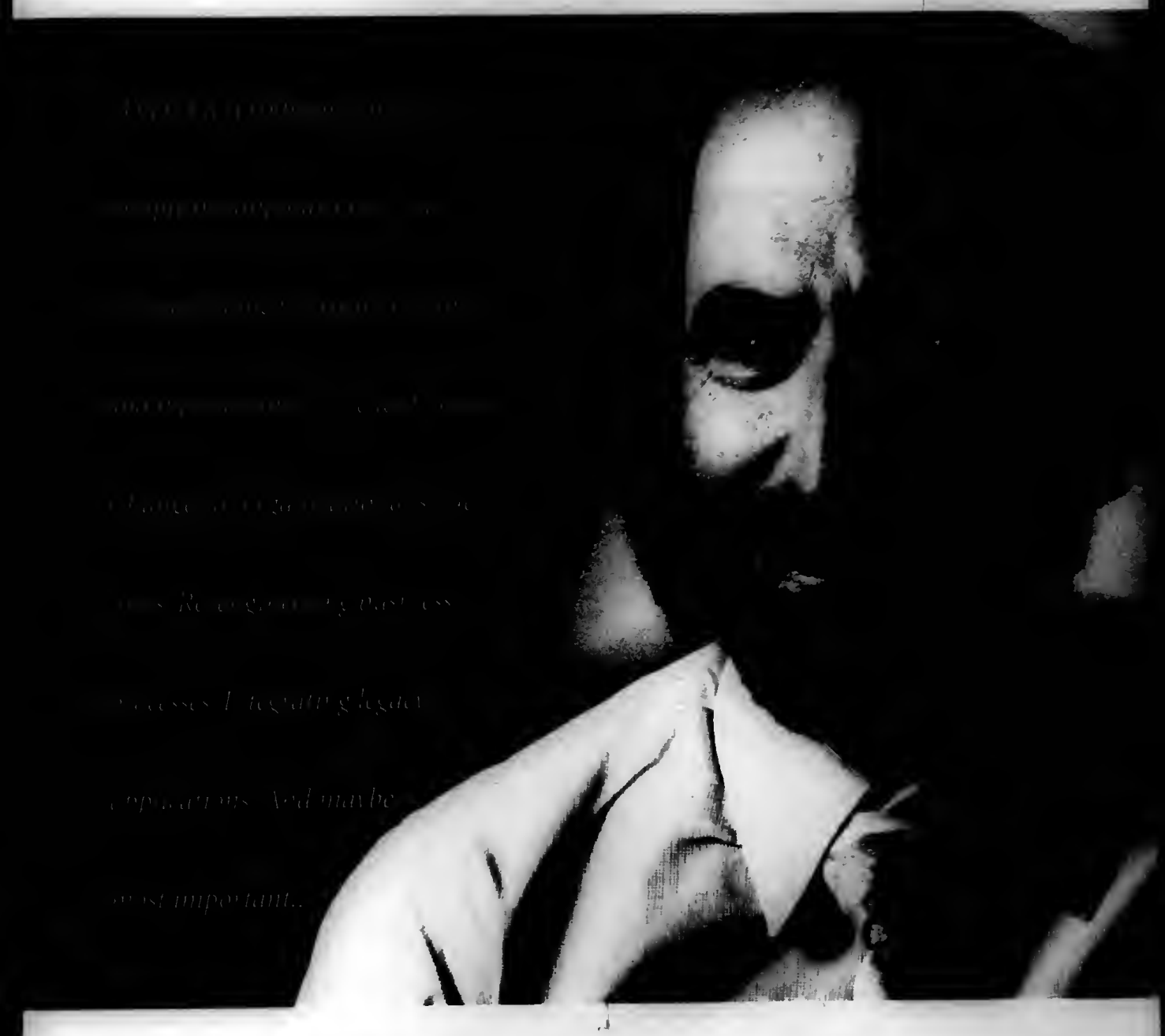

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Pathworks goes multivendor

By Craig Stedman
MAYNARD, MASS.

The multivendor LAN management capabilities of Pathworks Version 5.0, networking software that Digital Equipment Corp. is introducing this week, strike a chord that several users said they want to hear. However, analysts are unsure of how well the tune will play outside Digital's installed base.

"They [Digital] at least have something to talk about" with Pathworks 5.0, said Stan Schatt, director of LAN services at Computer Intelligence/InfoCorp in La Jolla, Calif. "But they have a tough sell just getting non-VAX customers to realize that they have a [LAN] system."

The Pathworks release, due to ship this year, includes a ManageWorks component that supports management of native Novell, Inc. NetWare and Microsoft Corp. LAN Manager networks across a corporation from a single client PC with or without a Pathworks-equipped server, according to Digital officials.

Katrina Holman, group manager for Pathworks product marketing, said the company is trying to create a second market for Pathworks as a management tool for Fortune 1,000 customers with mixed retail LAN environments. "We are embracing the network that's already there," she noted.

That embrace is "an absolute necessity" for Digital because of its relatively small presence in the LAN market, Schatt said. He said he expects Pathworks' market share to decline gradually, despite the new management strategy.

Digital will be one of the first vendors to market a low-end, client-based product for managing LANs from different vendors, according to Schatt and other analysts. Most LAN management tools available now are tied to specific networks and do not include the fully integrated management capabilities that Digital is promising, they said.

Some Digital customers said they have been looking for the kinds of features Pathworks 5.0 is supposed to provide.

"This could make our life a lot easier," said Henk Hazelhoff, a telecommunications consultant at Dow Chemical Co. in Midland, Mich. Dow wants to eventually standardize on Pathworks LANs, but for now needs a method of bringing its 50 or so NetWare installations under central control, he added.

The NetWare LANs are in sales offices and other remote sites and have been managed locally, he noted. "We're just beginning to connect those users [into the corporate network] and haven't got a global way to do that yet," he said.

Dr Pepper Co./The Seven-Up Co. in Dallas is also looking to move from managing its various NetWare LANs separately. "It would be nice to merge that into one product on one PC with one piece of software managing the whole mess," said Ed Homko, Dr Pepper's systems manager.

However, PacifiCare Health Systems, Inc. in Cypress, Calif., is concerned about Pathworks 5.0. The management features sound useful, "but our worry is that it's going to be more of a LAN manager" than a full network, said Matt Holdrege, senior network specialist at PacifiCare.

A new path

Pathworks Version 5.0 will be able to manage non-Digital LANs from a client PC without a Pathworks server

Novell to meet app, net management concerns

By Elisabeth Horwitt
DALLAS

Networked systems management and application development, perhaps the two most important and problematic aspects of corporate client/server environments, will get some welcome attention from Novell, Inc. at this week's Networld '93 show.

Novell will begin by announcing several new partners for AppWare, its client/server application development environment. Its partners include Gupta Corp. and Borland International, Inc., which will provide database modules and application development for AppWare Foundation.

Next on Novell's Networld agenda will be an update of its NetWare Management System (NMS) strategy. The vendor will announce a NetWare Loadable Module version of its Simple Network Management Protocol-based network management platform, as well as support for the Remote Monitoring standard.

New management tools

Novell should also announce AppWare tools for NMS, facilitating the development of new applications for the network management system, according to Rick Villars, a director at International Data Corp., a Framingham, Mass., research firm.

Other vendors, too, will get on the NetWare management bandwagon. IBM is expected to announce at Networld LAN NetView, its OS/2-based system for managing NetWare, Microsoft Corp.'s LAN Manager and Windows NT and its own LAN Server. And Hewlett-Packard Co. is expected to exhance its NetWare management application on OpenView.

Messaging, too

In the messaging arena, Novell will announce that NetWare customers will be able to use Microsoft Mail for Windows client software directly with NetWare Global Message Handling Service (MHS) by the end of October.

Novell will supply drivers that use Microsoft application programming interfaces to give Microsoft Mail clients direct access to Global MHS message transport, gateway and directory services. This means that Microsoft Mail users could exchange mail directly with users of any other MHS clients without gateways.

"It's a good idea from both sides," said Ed Wilk, a network manager at NetWare and Microsoft Mail shop WHDH-TV in Boston. "Any time a manufacturer gives you hooks to another part of the world, we're better off."

Also at Networld, Novell and AT&T will announce a Telephony Services Early Implementors Program for the introduction of telephony services for NetWare.

Staff writer Lynda Radosevich contributed to this article.

NetWare 4.0 migration tool to debut

By Elisabeth Horwitt
PROVO, UTAH

Novell, Inc. will shortly become the distributor of a third-party product that promises to alleviate the agony of migrating from NetWare 2.X and 3.X to NetWare 4.01's NetWare Directory Service.

The software package, which Novell co-developed with Preferred Systems, Inc., could give a much-needed jump-start to corporations' sluggish move toward Novell's enterprise-oriented network operating system.

Directory Services (DS) Standard eliminates 60% to 80% of the administrative grunt work involved in shifting from the bindery-, server-based 2.X and 3.X directories to 4.01's enterprisewide directory structure, according to Jack Serfass, president of the West Haven, Conn., software firm.

One of the biggest headaches involved in merging multiple 2.X and 3.X directories into a single global structure is that users often go by different names in different server directories. DS Standard can compare the different directories, locate the inconsistencies and do a global search and replace to fix them, Serfass said.

The program also automatically "discovers" different 2.X and 3.X databases and reads them into an off-line database. Network administrators can make changes without affecting users, taking the network down only when they are ready to implement the new directory, Serfass said. This cuts total network downtime during the migration by 80% to 90%, he added.

Such capabilities would be extremely useful to Hoechst Celanese Corp., which is currently in the middle of its migration from NetWare v3.11 to 4.01.

"We're very interested" based on a description of the product, said Lorie Mouklas, project leader at the chemical company in Somerville, N.J. At its current leisurely pace, the firm should be fully migrated to NetWare 4.01 in 12 to 18 months, he added.

TransAmerica Financial Services used Origen, an existing Preferred System product that DS Standard is based on, to make directory changes while migrating from 2.X to 3.11 servers. The TransAmerica Corp. division found that the program cut total migration time from 10 to four hours per server, said Sheryl Grossman, senior technical analyst.

A major reason for the time savings was Origen's ability to update users' assigned directory rights globally, instead of one by one, Grossman said.

The division plans to purchase DS Standard to help with a migration to 4.0, to begin shortly.

Out of the box

Scheduled to ship in the first quarter of next year, DS Standard will include these additional features:

- A Windows interface that enables users to make changes to a Version 4.01 directory tree by dragging and dropping objects such as user names and groups.
- Assistant, a checklist program that guides users through the 4.01 directory design process.
- An alarm system that automatically alerts the administrator when directory attributes exceed a preset threshold.

Preferred Systems is now shipping Origen Priority Kit, which supports automatic standardization and consolidation of 2.X and 3.X directories and their migration to the bindery emulation version of NetWare 4.01.

Priced at $695, the kit includes a free upgrade to DS Standard, which adds the support of NetWare directory service.

DS Standard's pricing has not been set.

—Elisabeth Horwitt

Windows

CONTINUED FROM COVER 1

through OEMs before Chicago [32-bit Windows] ships."

Ballmer said all the functions of Windows for Workgroups 3.11 will be available in Chicago. Microsoft, however, has yet to decide how many versions of Chicago it will produce and whether it will bundle Windows for Workgroups 3.11 in more than one version.

"For the next year, [Windows for Workgroups] 3.11 is available, and when Chicago ships, there will be a version of Chicago that basically replaces it," Ballmer said.

Information systems managers who initially install the program as a standalone replacement for Windows 3.1 can turn it on as a network version with a single menu selection.

OEMs unconvinced

While Ballmer said Microsoft is positioning the upgraded workgroup product to replace stand-alone Windows, OEMs that were contacted last week were noncommittal.

Some said flat out that they do not yet see enough demand to warrant bundling Windows for Workgroups in place of Windows. "We don't see demand for it. Bundles are for the masses, and the masses are not asking for it," said Daniel Sheppard, director of marketing at AST Research, Inc.

Sources at several hardware makers said they are enthusiastic about the features in the new Windows for Workgroups but added that Microsoft is asking too much in royalties to justify bundling it in place of Windows 3.1.

One source said that for Windows for Workgroups, Microsoft was asking almost double the roughly $15 per box royalty for Windows 3.1, and others agreed that this was too much to pay. In response, Ballmer said final pricing to OEMs for Windows for Workgroups would not be significantly more than that for Windows 3.1.

These sources and analysts raised the issue of how Windows for Workgroups will play with corporate IS. "MIS is scared to death of Windows for Workgroups. They don't want all these networks scattered about," said Kimball Brown, an analyst at Computer Intelligence/Infocorp in Santa Clara, Calif.

Brown said he expects to see most vendors offer a choice.

Zenith Data Systems already bundles Windows 3.1 and Windows for Workgroups on its Z-Note and Z-Station premium lines of notebooks and desktops. Zenith Data said it would move to only Windows for Workgroups 3.11 on those systems.

Faster and easier

The new 32-bit file system significantly increases speed in accessing data on both local and server hard drives, according to users and Microsoft. "It allows users to go right to the hard disk for data without having to go through DOS to get there," said Rogers Weed, lead product marketing manager for Windows for Workgroups.

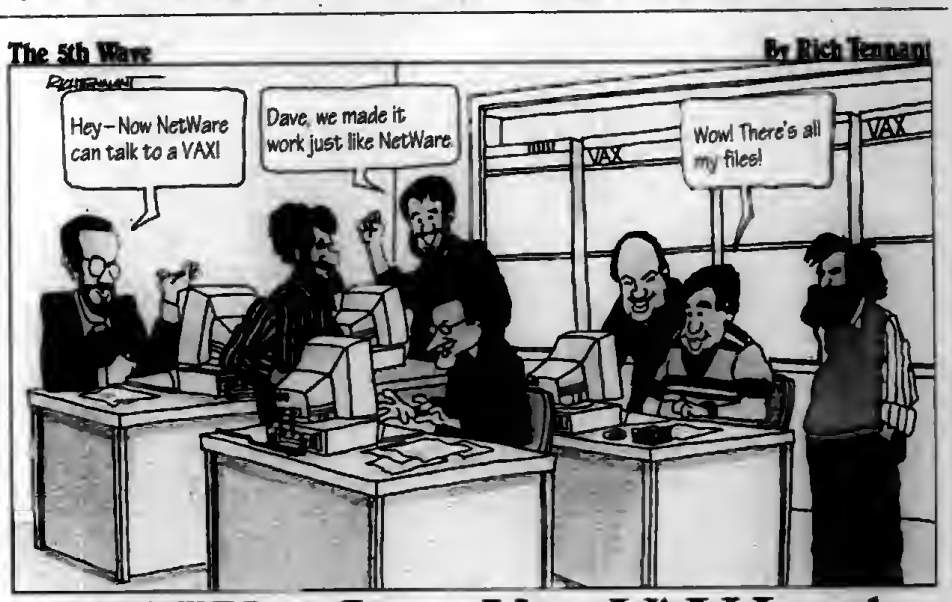
"You do notice the added performance in getting to local and network drives," said Tom Gibson, PC coordinator and beta tester at Weyerhaeuser, Inc. in Portland, Ore. "And so far, I have no problems running existing applications."

The company has also added a 32-bit redirector, a 32-bit version of its NetBEUI transport and features for supporting Novell, Inc.'s NetWare.

Microsoft said it believes it has eliminated many of the complaints IS managers had about Windows for Workgroups administration and security. "IS focus groups wanted the ability to centrally control the access privileges for their less experienced users, and I think we have given them that," Weed said.

While many diehard Microsoft corporate accounts like what they see in the new version, many others are struggling with where peer-to-peer products such as Windows for Workgroups fit into their overall strategies.

"If you are just eliminating 'Sneakernet' problems, then peer-to-peer gets you by. But if you want to protect your development investment, you are probably better off in most cases with a server-based environment," said John Chapman, senior technology consultant at Amoco Corp.'s technology introduction group in Chicago.



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AXP

MultiWare runs over the SPX/IPX protocol stack, so it doesn't require TCP/IP or any alternate protocol. MultiWare even comes with a shareable library that lets developers write distributed OpenVMS applications with the look and feel of NetWare, integrating existing NetWare resources via SPX/IPX.

In fact, MultiWare operates so much like native NetWare that your PC users will be amazed they're talking to a VAX. MultiWare supports all the familiar login, file, and print requests your NetWare users already know. Moreover, MultiWare takes full advantage of Novell NetWare's very fast data transfer rates.

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News Shorts

Wang imaging to support Sun

Wang Laboratories, Inc. said last week it plans to port its Open/image imaging software to **Sun Microsystems, Inc.**'s SPARC workstations and servers running under the Solaris 2.0 operating system. Sun's version of Open/image will become available in phases between November and February, Wang said. Wang does not plan to market the SPARC machines itself, a change from its deals with **IBM** and **Hewlett-Packard Co.** The company also introduced a version of Open/image that supports X Window System terminals as clients. It is priced from $495.

Cognos to unveil client/server tools

Cognos, Inc. will this week unveil its client/server tool set [CW, Aug. 9] at its user group meeting in Orlando, Fla. Dubbed Axiant, the new technology is built around a multiuser object-oriented repository and Cognos' PowerHouse engine. Axiant offers visual development, support for Rapid Application Development and automated maintenance, officials said.

Westinghouse adopts CDPD

Westinghouse last week became the first announced customer and also a reseller of CDPD, an overlay technology that sends packet data over unused channels on analog cellular channels. The company will use both a national CDPD network, provided by a team headed by **GTE Mobile Communications** and **Bell Atlantic Mobile Systems**, and a national radio packet network provided by **RAM Mobile Data**. The value of the contracts was not disclosed. The Westinghouse deal includes a commitment to have CDPD in the 6t largest U.S. cities by the end of 1994.

Panasonic adds CD-ROM to notebook

Panasonic Communications & Systems Co. announced a notebook computer with a detachable 3½-in. CD-ROM drive. The Panasonic CD-ROM notebook, based on an Intel Corp. 25-MHz 1486SX, has three versions, including one with a t0.4-in. active-matrix screen for $4,299. This version will ship in November. Panasonic will offer options lor full-motion video, a floppy disk or an extra battery for the CD-ROM space. The color LCD will be the first that matches the display size in the **IBM PC Co.**'s ThinkPad.

AST adds to servers

AST Research, Inc. last week rounded out its server line with an entry-level Extended industry Standard Architectnre (EISA)-based family called Premmia MTE. The servers include six drive bays and six EISA slots, np to 1G byte of hard disk storage, 8M bytes of RAM expandable to 128M bytes, ap to 512K bytes of second-level cache and an Intel 33-MHz 1486DX or 66-MHz 486DX2 microprocessor. Pricing starts at $2,000.

SHORT TAKES **NCube** announced the Parallel Storage Bay for high-capacity, high-throughput applications and introduced the Neube 2S M5 deskside system.... **Encore Computer Corp.** announced support of **Oracle Corp.**'s Oracle 7 Release 7.1, Parallel Query Option and Oracle 2.0.... **Rabbit Software Corp.** and **Tangram Systems Corp.** announced a merger to lorm Tangram Enterprise Solutions, Inc.... **Vmark Software, Inc.** will purchase the portion ol **Computervision Corp.** that services Prime Information customers.... **IBM** gained rights to sell and support **Gupta Corp.**'s SQLWindows for the IBM AS/400 outside.... Disk drive maker **Conner Peripherals, Inc.** expects to report a third-quarter loss greater than analyst expectations.... **HP** introduced a t0G-byte mass storage system lor ase with networked PC-based servers from companies including HP, **Compaq Computer Corp.**, **AST Research** and **Dell Compnter Corp.**

Down the road

Users at last week's ABUI meeting were treated to previews of several major upcoming Banyan announcements.

Chief among them was a distributed architecture for managing Banyan's Vines network operating system and enterprise network services via GUI and SNMP Version 2.0 protocols.

Banyan already provides SNMP-based management of Vines servers; however, the SNMP Version 2.0-based system, due out in mid-1994, will support a distributed infrastructure in which Vines servers can act as management nodes for local networked devices, according to a Banyan spokesman.

Incorporation of SNMP management information bases within Banyan services such as StreetTalk III and E-mail will allow users to manage such services via an SNMP-compatible platform such as Hewlett-Packard Co.'s OpenView.

Banyan's Event Logger utility, which is incorporated into Vines 5.5, will enable Vines-based management nodes to proactively notify a management console of key events rather than waiting to be polled, as with typical SNMP systems.

Also in the works is a Windows-based GUI for its M° suite of management services, the spokesman said (see story below).

Banyan also previewed an announcement of its Enterprise Data Distribution (EDD) offering, which will be made this week at Networld. EDD will enable users to distribute and collect all types of data as well as software across tha range of clients and network operating systems supported by Banyan's enterprise services.

Other Banyan announcements previewed last week include the following:

- Direct TCP/IP support lor Unix, DOS and Windows clients of Vines and Enterprise Network Services. This will eliminate the need for two protocol stacks on clients that need to talk TCP/IP.
- integration of StreetTalk with the X.500 Global Directory within 12 to 18 months.

—Elisabeth Horwitt

Banyan's plan

CONTINUED FROM COVER 1

its desire to encourage independent software vendor development . . . [is] driving many users away from patronizing independent software vendors," said 1st Lt. Roh Page of the U.S. Marine Corps.

Such tactics "could make some [independent software vendors] gun-shy of further development in Vines and limit users' choices," said Randy Bradley, chairman and chief technical officer, at NetPro Computing, Inc. in Scottsdale, Ariz., which develops Windows front ends for Banyan network management services. "The question becomes whether you can have a robust third-party community living off the fringes, never knowing where [Banyan] will compete with us next."

Trouble lurking

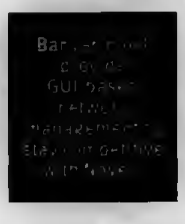
Given Banyan's history of reliance on third parties for front-end applications, such defections could he disastrous lor customers. "Some users with a glass-house mentality will want all their products from one vendor, but others want the innovation provided by third parties," said Roger Mertz, a network manager at Crown international in Elkhart, Ind.

Banyan spokesman Jim D'Arezzo responded that while Banyan "absolutely believes" in supporting its third parties, "there will be times where our paths overlap." Banyan mnst provide graphical user interface (GUI)-based network management to stay competitive with archrival Novell, inc., which bas incorporated a GUI into the notwork administration piece ol NetWare 4.01, D'Arezzo said.

"It's become a point of comparison, so we can't just say, 'Go buy a third-party product,' " he said.

Over the past year or two, Banyan has repeatedly introduced a competing prodnct "just when you bave something stable," said Matt Gillies, a network engineer at Incognito Software, Inc., a Vancouver, British Columbia, vendor of Unix-to-Vines networking products.

For example, Banyan contracted witb Isocore to develop its own Simple Mail Transfer Protocol gateway "instead of just recommending ours, which we spent two years developing," he said.



Indeed, Banyan's inability nr unwillingness to aggressively court third-party vendors was a primary area of concern for attendees that responded to a *Computerworld* electronic-mail survey at the conference.

"I would like to see more hospitality extended to Vines developers in order to facilitate an increase in third-party software development," said Robert Skogstad, network administrator at Clark, Klein & Beaumont in Detroit. Several others agreed.

Furthermore, Banyan is behind rivals Microsoft Corp. and Novell in providing open, inexpensive or free application programming interfaces (API) and developers tool kits, independent software vendors and users said. Lack of open APIs has caused "a number of interface and compatibility problems" with Vines, said one user, who asked not to be identified.

"Banyan needs to offer Windows-based solutions out of the box, but they should license the software from third-party developers who have the expertise and the products that work now," said David Day, a systems analyst at Dow Brands in Indianapolis.

We want Windows GUIs

Network administrators at the show said they definitely want Windows-based GUIs for Banyan's directory, E-mail and management services, which are difficult and time-consuming to administer. But several users said they did not need such front ends from Banyan, given that independent software vendors such as NetPro, Trellis, Inc. in Hopkinton, Mass., LAN Shark Systems, Inc. in Reynoldsburg, Ohio, and Incognito already offer such products.

For example, NetPro's Streetwise, a Windows-based administrative tool for Banyan's StreetTalk, "saves me hours of management time every day," said Andrew Gahm, senior functions analyst at West Jersey Health Center in Gibbsboro, N.J. "Before, I had to keep exiting Windows every time I wanted to fix or change something."

Banyan will roll out Windows-based GUIs over time for administering its major services such as StreetTalk, Intelligent Messaging and Enterprise Network Services, company spokesmen said.

Don't look now, but Banyan Vines professionals have become marketable at Novell sites. *See Careers on page 113.*

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that adapts to multiple environments.

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To find out more about the multiple-network HP LaserJet 4Si MX printer and the upgradable HP LaserJet 4Si printer just call 1-800-LASERJET, Ext. 7299.† Capabilities this advanced make a world of difference—in any environment.

HEWLETT PACKARD

Oracle serves up (some) 7.1 goodies

By Kim S. Nash
ORLANDO, FLA.

Oracle Corp. announced last week several additions to its Oracle 7 database at an annual meeting of the International Oracle Users Group held here. But the two options that turned users' heads — Parallel Query and enhanced replication capabilities — will not be ready when Oracle 7.1 ships in January.

"The groundwork is there [in 7.1], but we want to be sure replication and parallel technology is ready for prime time before we send it out," said Ken Jacobs, vice president of product planning.

Oracle is trying to get promised products, such as database upgrades, out faster, said Jeff Henley, chief financial officer. "This means making some compromises and not having every last feature" immediately in a new product, Henley said.

However, users can expect to see the following features, among others, in Oracle 7.1:

- PL/SQL extensions that, for example, let users program functions for a server that previously had to be done on a client.
- Read-only table spaces, which save time and resources during database backup.
- Several Oracle 7 bug fixes.
- Improved naming devices to better track users and secure the database.

Meanwhile, Oracle gave users glimpses of features to come. For example, instead of relying on two-phase commit to keep duplicate databases in sync, future Oracle 7.1 releases are expected to sport transaction-based replication, which automatically replicates changes across multiple tables and databases without waiting for a request. Oracle's planned features are similar to those offered by Sybase, Inc. and The ASK Group, Inc. in its Ingres database [CW, Sept. 20].

Speed counts

Parallel Query Option was designed to chop up data requests, spreading various pieces of the query to as many processors as are available on a given symmetric multiprocessing or massively parallel machine. Distributing a query across many CPUs can speed up processing time by tenfold or more, Oracle said.

Users at the show's general session gushed when they saw a demonstration. A query of a 5,000-row Oracle database table on a 20-CPU box from Sequent Computer Systems, Inc., done the traditional way — using one processor — finished in 6 minutes, 47 seconds. The same request processed in parallel mode screeched through in 23 seconds.

"Holy [expletive], that thing is hot," said Craig McCrary, project analyst at Applied Benefits Research, Inc. in Palm Harbor, Fla.

"I'm interested in Parallel Query, but I'm more interested in better backup and recovery first," said Lorin Gallistel, a database analyst at Northern Telecom, Inc.

Side dishes

As expected, Oracle also unveiled the following [CW, Sept. 20, 27]:

- **Oracle Office 2.0, a suite of electronic-mail and document management applications, is due in the first quarter of 1994. The new version will become a competitor to Lotus Development Corp.'s Notes.**
- **Media Server is a version of the Oracle database that handles full-motion video, CD-quality sound, images and text. Media Objects is a set of tools for building a user interface for set-top boxes envisioned to sit atop people's TVs to let home viewers navigate New Age interactive TV. Both are scheduled to ship to developers in January.**
- **Oracle signed up heavyweight mainframe and high-end Unix software makers, including BMC Corp. and Legent Corp., to build and/or port systems management tools for Oracle databases.**

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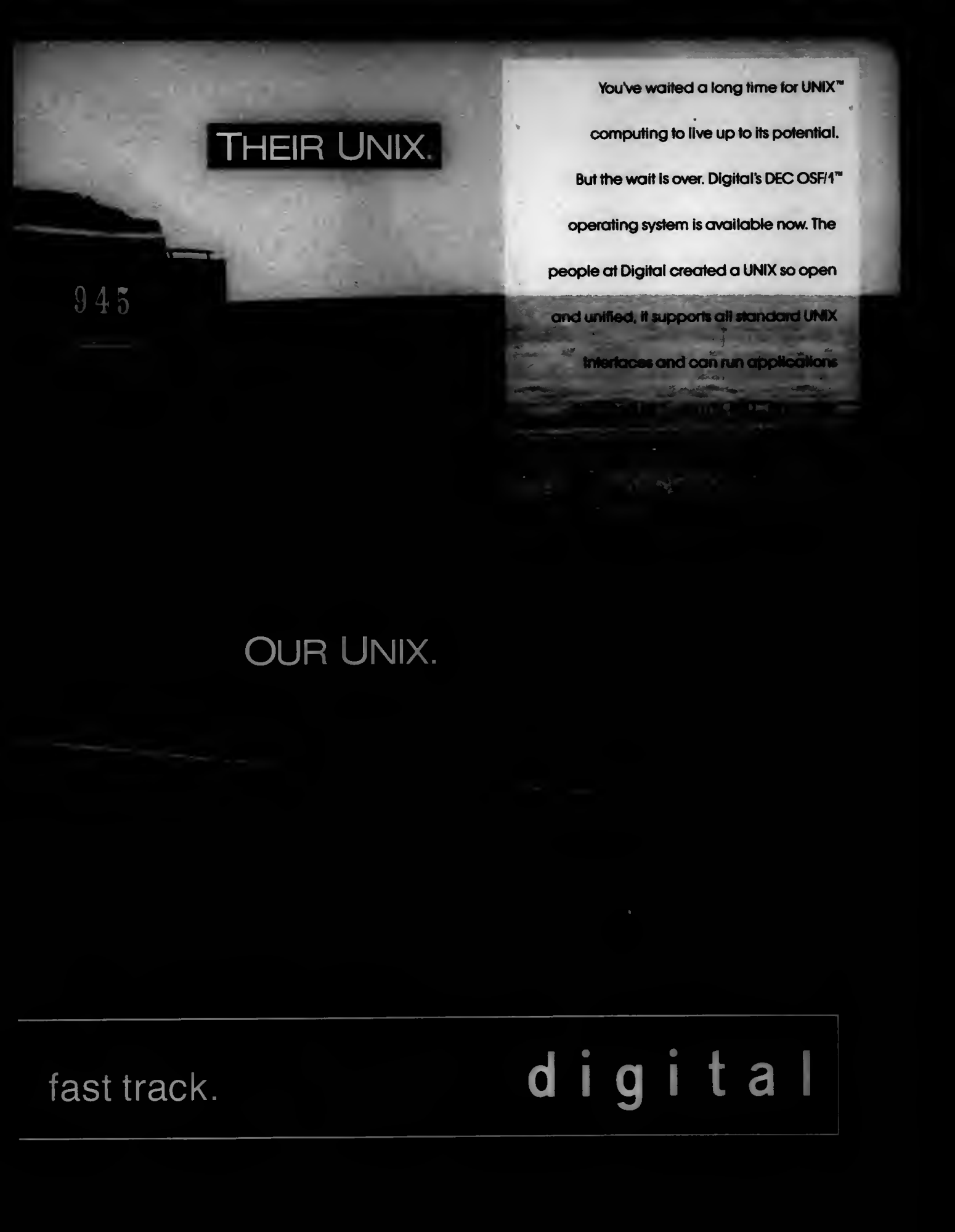
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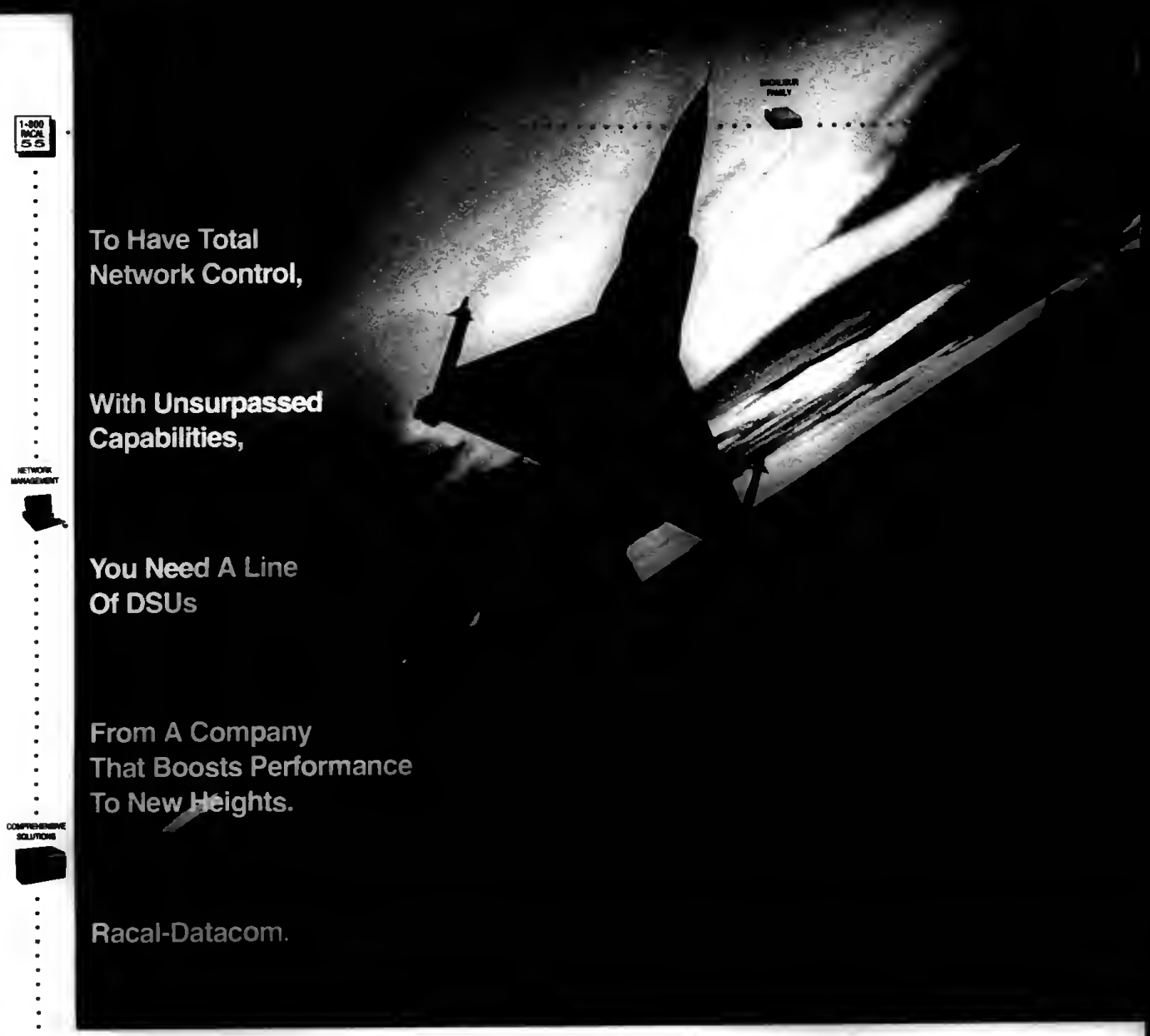

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WordPerfect Office wins fans

By Lynda Radosevich

WordPerfect Corp.'s Office messagng software, relegated mainly to small LANs in the past, is beginning to make headway into enterprise networks, where it may give electronic-mail market leaders Lotus Development Corp.'s CC:Mail and Microsoft Corp.'s Mail a run for their money.

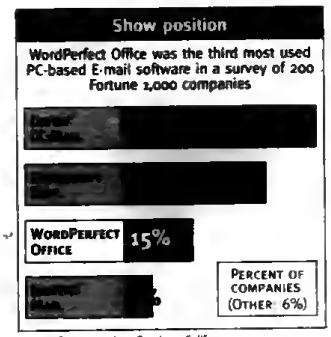
Corporate accounts include United Press International (UPI) and Mercedes-Benz of North America, Inc. Also, American Airlines recently signed a large purchase contract, and Shell Oil Co. is close to signing one, according to a source close to the deals.

"I think WordPerfect Office bears watching in the E-mail market," said David Ferris, editor of the "Ferris E-mail Analyzer," a newsletter in San Francisco.

All-in-one package

Users said the main reason they picked Office over the leaders is that it integrates E-mail, personal calendars, task management and group scheduling into one application.

The benefits include one interface for end users and one directory for administrators. Both CC:Mail and Microsoft Mail are just getting around to offering scheduling, and their scheduling software is still separate from E-mail applications.



Source: Dataquest, Inc., San Jose, Calif.

"Because we would have to purchase separate scheduling and calendaring with Microsoft Mail, the cost was going to run between $57 and $62 per person. With WordPerfect Office, it was $33," said Linda Smith, a PC support and LAN analyst for Printing Products North America (PPNA), a division of multinational conglomerate Hoechst Celanese Corp.

Performance drawbacks

However, users said while Office 4.0, released in June, takes care of many scalability problems of earlier versions, performance is slow, especially on the DOS platforms.

The PPNA division is migrating roughly 1,000 users from IBM's Profs to Office 4.0 via an X.400 gateway. The division used an earlier version of Office that required three to four hours of downtime each week to synchronize directories with Profs.

Version 4.0, which has been in production for four weeks, has an updated X.400 gateway that does not require any downtime, Smith said.

Because rolling out PC-based E-mail across an enterprise is so complicated, users said WordPerfect's support was another reason for choosing Office.

"We just found Microsoft to be difficult to work with in terms of support. WordPerfect has always bent over backward," said Gregg Smith, president of Applied Intelligence Group, Inc., a systems integrator in Alexandria, Va.

The group is installing Office 4.0 for UPI's offices throughout the world. Although UPI purchased Microsoft's bundled suite of office applications, including E-mail, it went with Office for E-mail because of networking support issues and Office's good remote communications, Smith said.

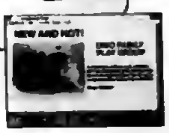
For the Environmental Protection Agency, Office 4.0 took care of some "show-stopping" directory synchronization and gateway problems, said Mike Stein, acting chief of the information center branch in Washington.

RemoteWare and the SEMINAR Charlie missed

AT THE VERY MOMENT AN EXPERT WAS EXPLAINING THE COST- AND SANITY-SAVING BENEFITS OF REMOTEWARE-CREATED AUTOMATED WORKFLOW SYSTEMS TO A ROOMFUL OF HIS FELLOW CLIENT/SERVER AFICIONADOS [redacted] was sitting

in a tiny center seat, in coach, staring blankly at a fly nimbly exploring the OXYGEN PANEL above him. It had come down to a scheduling conflict. One more FREE product seminar, half-day, inevitably bad deli sandwiches... potato chips that had gotten too close to the kosher dills and gone soggy.

Or this junket to clean up yet another set of branch communication difficulties in Opelika, St. Louis, and San Antone. So the picture of this fly on the ceiling RUBBING ITS FRONT LEGS TOGETHER with an ominous delight didn't have the significance for him it might have had he seen that MEANWHILE, BACK AT THE SEMINAR THE REMOTEWARE FOLKS WERE SPINNING COLORFUL TALES OF SUCCESSFULLY-IMPLEMENTED FIELD COMMUNICATIONS SYSTEMS, HOLDING CHARLIE'S TECHNO-PEERS FROM COMPETING COMPANIES CAPTIVE WITH THE PROMISE OF THOUSANDS OF FULLY-AUTOMATED, EASY-TO-MANAGE AND UNATTENDED DIAL-UP COMM SESSIONS, AND RIVETING ACCOUNTS OF REAL COMPANIES WITH HUNDREDS OF MOBILE CORPORATE LAPTOPS AND REMOTE BRANCH OFFICES USING CENTRALLY-CREATED AND MANAGED ELECTRONIC FORMS, DOCUMENTS, AND REPORTS, ALL LINKED TO CENTRAL SYSTEMS AND DATABASES, AND ALL NEATLY SUPPORTED BY INTEGRAL ELECTRONIC SOFTWARE DISTRIBUTION CAPABILITIES?



So these were the things Charlie was missing: solutions to the very problems that had made this one more night away from home a necessity. That, and what actually turned out to be a delicious RemoteWare lunch of pasta salad, FRENCH BAGUETTES with prosciutto and mozzarella, and fresh strawberries.

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Postal Service sorts through automation

CONTINUED FROM COVER 1

keyed in, 17 people sort the same volume at a cost of $19 per thousand. And by hand, a worker sorts 800 letters in an hour at a cost of $43 per thousand, 14 times the cost of fully automated operations.

The old and the new

The 14-acre mail-processing center here is a microcosm of the entire U.S. Postal Service, with an armada of machines that spit out mail faster than the eye can see next to Benjamin Franklin-era pigeonholes where workers still sort by hand. One of 260 such plants in the U.S., the center processes 3.7 million pieces of mail daily, as much as is handled in all of Finland.

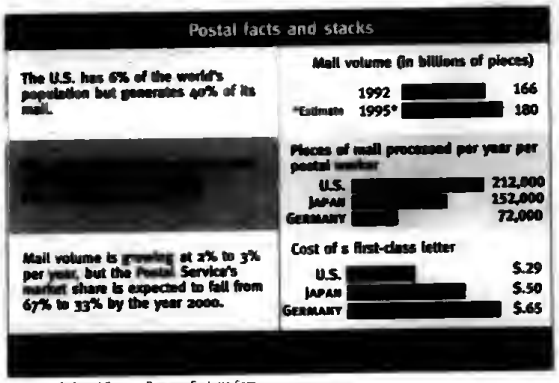
Processing letters — about 70% of all mail volume — is done in three tiers. At the top, mail already bar-coded by bulk mailers sails through with hardly a glitch, earning those mailers the lowest rates.

Envelopes with neatly typed or printed ZIP codes pass through optical-character recognition (OCR) equipment, which reads the ZIP codes, applies bar codes and sorts and sends the envelopes out. The most advanced gear adds two digits to the nine-digit ZIP codes and sorts the mail into the exact sequence that the neighborhood mail carrier walks.

The Postal Service is also beginning to use remote bar-coding technology to process letters with ZIP codes that the OCR machines cannot read. Now in place at 25 locations — expected to grow to 250 by 1996 — these systems scan the face of envelopes and send high-quality images over a network to video terminals at remote locations.

Images from Merrifield are sent 150 miles away to Salem, Va., where wages are relatively low, to contractors who key in enough of the address to enable software running back at Merrifield to determine the ZIP code. The code is then transmitted over a network to a machine — which has been holding the envelope — for application of the bar code and sorting.

The Postal Service is pinning its hopes on new handwriting recognition techniques to handle some of the volume now going to these remote coding sites. Research at the State University of New York at Buffalo is expected to reduce by half the 20% of mail that must be manually processed (see story left).



Source: U.S. Postal Service, Paramax Systems Corp.

The Postal Service started its automation push in 1982 with the introduction of OCR and bar-code technology. The service plans to spend $3.4 billion in the first half of this decade on a second wave of advanced automation, which it hopes will allow it to avoid some $3 billion a year in salary expenses.

An uphill battle

The service says automation has eliminated 38,000 positions in three years and will trim another 22,000 by 1995. But in a report last year, the U.S. General Accounting Office (GAO) said, "Automation is unlikely to ... reverse the persistent tendency for costs to outpace inflation."

The GAO said that in 1991, $138 million in labor savings from automation were "overwhelmed" by $627 million in wage and benefits increases in those areas affected by the automation.

In a reply to the GAO, the Postal Service said it was unfair to judge its automation program at its "beginning stages," but it went on to admit that "it is unrealistic to expect our automation program to do more than restrain the growth in costs." Nevertheless, the Postal Service said automation boosted productivity 4% last year.

Indeed, despite a recent reorganization and downsizing by Postmaster General Marvin T. Runyon, the Postal Service expects to record an operating loss this year of $500 million — $140 million attributable to operating cost overruns and $360 million from a revenue shortfall due to postal-rate discounts to nonprofit mailers.

Translation, please?

The problem is, there are different strokes for different folks.

And that's got researchers at the Postal Service-funded Center of Excellence for Document Analysis and Recognition (Cedar) at the State University of New York at Buffalo working on "stroke extraction" software, which relates the characteristics of pen strokes to letters of the alphabet.

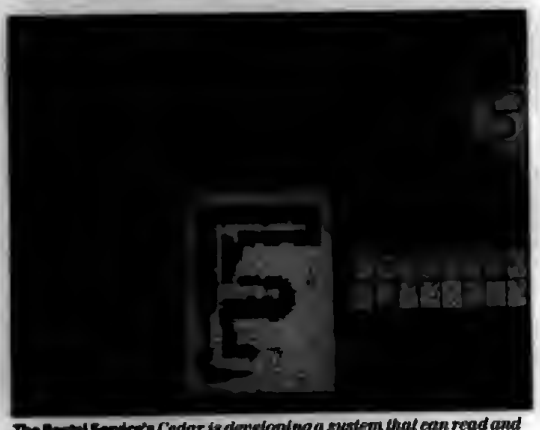
The objective is to solve a tough computing challenge — how to recognize handwritten scrawls with enough speed and reliability to derive a bar code for postal sorting.

After coming up with one or more plausible translations of a letter or word, Cedar's software checks for context. For example, if it could not decide whether a ZIP code is 70004 or 20004, it might note that the previous address line said, "Washington, D.C." It then could check a database and see that there are no ZIP codes in Washington beginning with a '7.'

The Postal Service wants the Cedar system to be able to process 50% of handwritten mail with 98% accuracy, with the balance handled by human sorters. The goal is for the Cedar system to process 13 envelopes per second, something it will be able to do when it is rolled out in 18 months, according to Cedar Director Sargur Srihari.

For now, on a Sun Microsystems, Inc. SPARCstation, the software deciphers addresses and ZIP codes 40% of the time, Srihari said. It recognizes the five-digit ZIP code alone — enough to get the mail to the right post office — 75% of the time.

— Gary H. Anthes



The Postal Service's *Cedar is developing a system that can read and decipher handwritten addresses*

The General is watching

Having automated all "the administrivia," the Postal Service is moving on to more challenging systems, according to Richard D. Weirich, IS vice president.

One of these is the Postal Service's corporate executive information system (EIS), which tells management in near-real time how well the organization is performing.

Weirich said EIS is a favorite tool of Postmaster General Marvin T. Runyon, whose recent overhaul of the huge agency was based in part on a desire to improve the flow of information among the agency's operating units, IS organization and Postal Service management.

From a terminal in his office, Weirich demonstrated how managers check mail inventory left each morning at each of the Postal Service's 260 processing centers. They can determine whether those levels exceeded standards and whether the centers met their delivery schedules to post offices.

Users can also look at the results of the latest quarterly customer satisfaction surveys, which show how customers ranked home delivery, post office window service and 35 other items in a given region or city.

According to Weirich, the EIS influences line managers, even those who never use it.

In a field visit recently, Weirich said he asked a plant manager what motivated him, to which the manager replied, "I want to get my inventory down tonight because I know Marvin Runyon will look at his computer tomorrow, and he'll see a blinking light if I don't."

— Gary H. Anthes

Postal Service's Richard D. Weirich: *EIS is motivating plant managers to produce*

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Software profits speak many languages

U.S. vendors say foreign markets turn quick cash, account for almost half of all software revenue

By Cara A. Cunningham

Users of 1-2-3 for Windows 4.0 can simultaneously recalculate, *calculer maintenant, neuberechnen* and *salkeisan* their spreadsheets thanks to an unprecedented worldwide rollout last summer that saw Lotus Development Corp. release its upgrade in 23 languages.

The software giant's bold release schedule — English, French, German and Japanese versions were shipped in June, with 19 additional languages to follow — epitomizes a new strategy among U.S. vendors, which now churn out foreign-language versions of software concurrently with the English release.

Multinational companies can standardize on one software application for all of their geographies, non-U.S. users benefit by quickly getting their hands on major releases and updates, and vendors are able to more quickly see profits from the foreign markets that now make up as much as half of their revenue.

Demand is high

"We insisted on translated versions in our approach to vendors," said Didier Mougenot, director of information systems at Valeo, a Paris-based manufacturer of automotive components, which recently purchased almost 200 copies of 1-2-3 for Windows 4.0 in multiple languages directly from Lotus. "It is very difficult to deal with the fact that a software vendor doesn't have a certain product for a given country."

"There are more multinational companies working with us these days, and they demand multiple-language versions before they will buy any of the product," said Jeffrey Bier, vice president of Lotus' spreadsheet products division in Cambridge, Mass. "Clearly, we are holding off a large portion of our revenue if we don't have non-English versions."

The impetus for U.S. vendors to translate their software is increased revenue.

For the past few years, companies such as Microsoft Corp., IBM, WordPerfect Corp. and Borland International, Inc. have seen the overseas market provide more than 50% of their total revenue, company officials said.

Couple these strong opportunities with the U.S software market's current rash of price-cutting and it becomes clear why software developers are looking beyond their national borders to fortify their sales.

"More than half of our revenue for OS/2 is from outside the U.S.," said Wally Casey, director of marketing at IBM's Personal System Products division in White Plains, N.Y. "I can't afford to be more than a couple days [behind the English release] with foreign-language versions."

Even as they chase after profits abroad, developers are learning that translating, or localizing, software is an expensive, time-consuming process that requires product managers and engineers to rethink the way software is developed.

Many larger software vendors that have already enjoyed returns on their localization investments are now learning to streamline the process by beginning translation early in a product's life cycle, instead of as an afterthought. Although the cost is still high and there is no way to automate the entire translation process, companies such as Microsoft and WordPerfect now accept localization as a part of regular product cycle costs.

"Any way you cut it, internationalization costs a lot of money," said Rich Barth, Microsoft's Windows NT product manager. "It's important for us to do it very efficiently."

Nipped in the bud

To help cut down on the amount of recoding involved in producing multiple-language versions of a product, Microsoft now makes allowances for foreign-language support in the early stages of a product's life. "We began training developers not to be language-specific," Barth explained.

Programmers include more flexibility in the original U.S. version of a program, with dialog boxes that can be sized to accommodate longer words often found in languages such as German and date boxes that can handle European as well as American conventions. Also, all cultural references must be removed from the interface, training material and documentation, Barth said.

This process, known as internationalization, is done by most software vendors that intend to localize their products. Then, instead of recoding the entire product, developers isolate interface components in the internationalized English version into a separate file and translate only that portion.

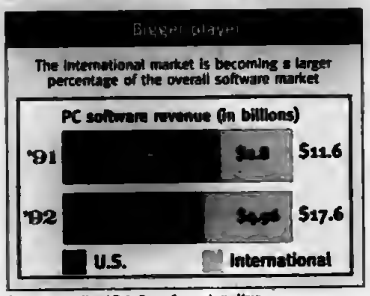
The less coding that has to be done for the translated versions, the faster the software can be released into foreign markets, a key aspect of international success.

WordPerfect, which internationalizes its English versions to expedite the translation process, has developed some internal macros and batch files to help automate the localization process.

"But as far as the translation itself goes, it is still very human labor-intensive," said David Pearson, director of international PC product marketing at the Orem, Utah-based company. "A direct translation just doesn't cut it. Our translators take great pride that they are not just doing a word-for-word translation, but truly localizing."

"Translating is subjective and more of an art than a science," agreed David Greco, president of World Ready Software, a San Francisco company that advises software vendors on localization techniques. Greco maintained that there is a hidden benefit to translating software.

"The more languages that you do, the more refined the product will be," he said. "It's like doing multiple beta tests."



Source: International Data Corp., Framingham, Mass.

Cunningham is an IDG News Service U.S. correspondent. Additional reporting by IDG News Service's European correspondent.

Deals

Partnerships, products make the scene

PARIS — Groupe Bull and IBM Europe issued a statement reaffirming plans for the "successful continuation" of their partnership after IBM France's chairman cast doubt over IBM's financial commitment to the ailing French vendor.

During the announcement of IBM's PowerPC here in Paris, Claude Andreuzza, president of IBM France's management directory, said, "It would not bother us a bit if we saw our share [in Bull] diminish. We are not Bull's banker."

The French government is preparing to recapitalize the state-controlled Bull by injecting several billion francs into the company. IBM would be asked to follow suit in order to maintain IBM's 5.68% equity stake it secured two years ago in a broad partnership with Bull.

The joint communique issued this week said the two companies would consider the equity question in "due time" and declined further comment. The statement also said the introduction of the PowerPC and PS/2 technologies reinforced their existing agreements.

LONDON — Electronic Data Systems Corp. has launched a European version of its Technical Products Division, which sells desktop systems and services in the U.S. The European division will offer PC hardware, data communications, software applications, corporate licensing and systems integration services.

It will establish a centralized European warehouse and distribution facility in Eindhoven, the Netherlands, and arrange direct support services. The company claims to be one of the Top 10 PC resellers in the U.S. and aims to replicate that success in Europe by meeting multinational companies' need for cross-border sales and support.

TOKYO — NEC Corp. announced a multimedia communications system and groupware software that lets remote users share applications and data while exchanging handwritten memos, voice and full-motion video in real time.

The software, called Multimedia Group Work System OfficeMermaid, runs on an NEC EWS4800 Unix workstation equipped with a digital video camera, a microphone, a digitizing tablet and a specially designed expansion board integrating communications control and coder/decoder (codec) circuits. The EWS4800 is built around a Silicon Graphics, Inc. Mips R4000 64-bit RISC CPU and runs NEC's EWS-UX/V operating system, based on Unix System V Release 4.2.

The controller/codec board shrinks electronics that previously required a separate cabinet onto a few chips mounted on a single circuit board, making it possible for the entire system to be contained in the workstation, an NEC spokesman said.

The system will start shipping in Japan on Dec. 21 and outside of Japan in October 1994. Prices start at $24,550 for an Integrated Services Digital Network version and $21,850 for a LAN version.

HONG KONG — Reuters Ltd. has unveiled an information search and retrieval service that gives users access to a database of 10 million articles collected from its own and international newspaper sources. The service, while not the first of its kind, is offered at a lower cost than others on the market, the company said.

The Reuter Business Briefing allows companies to conduct research quickly by pulling up relevant newspaper and magazine articles written about a certain company or industry in a particular country and covering a specific topic, according to Reuters.

From IDG News Service reports.

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(U)nixed

An immutable fact of life is that everyone wants something they are not likely to get or wants to be someone they cannot be. Take Unix

users, for example. They want to be like PC users, able to pop their Unix applications out nf one machine and run them without any modifications on another, with each of the machines running some Unix variant.

Or, for another example, take most of the industry's top executives. They want to be Bill Gates, at the controls of a steamroller like Microsoft.

How about you? If you are Novell chief Ray Noorda, you might like to be invisible right about now after failing to unite the various Unix factions beneath an umbrella plan to turn Unix over to X/Open Co., an independent standards body.

The plan sounded good, obviously too good. Novell, which bought the Unix trademark earlier this year, was to deed the trademark rights over to X/Open, which would henceforth certify Unix compliance. Users would then see the cost of Unix application development plummet. (One application would be developed for all Unix platforms, irrespective of the flavor of Unix featured on that box.) And they'd get the portability PC users have always enjoyed.

What tripped up Novell on the way to the altar was the same force that has undone almost every consortium the computer industry has produced: self-interest. It is proving a far more potent influence, even more so than the fear of Microsoft's dominating the 32-bit environment with Windows NT the way it dominates the 16-bit world with MS-DOS and Windows.

For example, Novell is only a bit player in a desktop Unix market dominated by The Santa Cruz Operation and hotly pursued by Sun. The SCO's legitimate fear was that the "Unix" Novell would hand over to X/Open would favor development of Novell-based products, like UnixWare. Hey, why invite a competitor into a market you already own? The answer is, you don't.

And why should Novell, which paid more than $300 million for the Unix trademark, hand it over to someone else — even a standards body — without linking the gift to its self-interests? The answer is, it won't.

Therefore, why should you Unix customers hold out hope for some agreement among the different Unix factions that would produce a source-code-level armistice and eventually yield the portability you want? The answer is, it's not coming any time soon.

There *does* seem to be momentum to implement a set of common APIs for Unix following an agreement by 75 vendors earlier this month to do exactly this. And Ray Noorda and Novell have to do *something* to show some Unix leadership, lest they risk trashing a $300 million investment and deeding Unix leadership to other vendors.

But don't hold your breath. You'll see a unified Yugoslavia before you'll see a truly unified Unix. The fear of Microsoft and NT is not yet that great, and the politics of consortia are too overbearing to give you what you want.

Bill Laberis

Bill Laberis, *Editor in chief*

Off the mark

"Protect yourself" [CW, Sept. 6] nffered an extremely misinformed and biased account of the contract employment industry.

In the first place, while placing consultants out as 1099s was the industry norm before Congress passed Section 1706 in 1986, virtually every contract employment company today hires all of its consultants on a W-2 basis. Temporary/consulting services still placing 1099s today are very much the exception.

Your article also misses the point with regard to the licensing of temporary/consulting services. The truth is that since we are always the "employer of record" for our consultants, we are required to adhere to all the laws that govern workers, including providing coverage fnr our consultants under workers' compensation.

The fact is that the majority of firms in our business offer their consultants much more than the minimum required by law. In our nationwide network nf offices we nffer many additional benefits and treat our computer consultants as our most valued resource. Computer professionals should know that contracting with the right firm can be a most rewarding and pleasant experience.

Ellis Schultz
Owner
Uniforce MIS Services
Portland, Ore.

GUI is only tip of big iceberg

Your Aug. 23 issue featured an article on client/server tools nsing graphical user interfaces (GUI). There was a quote from Peter Schleider regarding the "limited" popularity of structured analysis in the new world of client/server development.

it is amazing to see the lack nf understanding in our profession regarding the essential service we can provide in building models that assist businesses to manage themselves. No serious in-depth discussion of business policy and process will be keyed off by a discussion of a GUI front end.

The GUI is only the tip of the business system iceberg. Hidden beneath it are strategic goals, business policy statements, business event analysis, organization to function matrices, etc.

Those models can all be stored in our KnowledgeWare CASE tool. And we can generate our GUI distributed application from the same repository in which we document the entire business model, tying essential components together. Is that not what systems organizations should be about?

It is only with models and repositories such as these that systems organizations will be able tn respond quickly to changing business needs.

John F. Shekleton
Senior systems analyst
Star Tribune
Minneapolis

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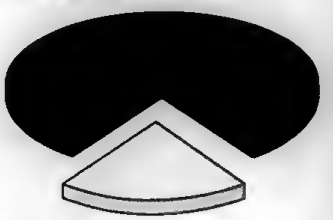

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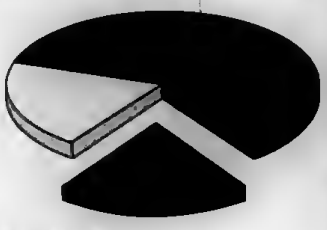

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Tone-to-tone communication

Michael Cohn

This *should* be the golden age of communications. We have pagers and faxes. There is electronic mail. We've got fiber optics and videoconferences and bridges and routers and cellular phones that fit inside a shirt pocket. Coming sooo will be interactive TV, videophones and wristwatch personal communication devices. But with all this, we communicate less and less effectively than we have since the days of the Pony Express.

For the 1800s, the Pony Express was a heck of a system, but it sure wasn't fault-tolerant. Mail was misplaced. Riders were robbed. Businesses went belly-up waiting for a horse that never came in. (The same thing happened to my uncle at the Preakness, but that's another story.) Back then, conversations were asynchronous ... message traffic moved one way at a time with a month or four lost in between.

Alexander Graham Bell pretty much fixed all that, though, or so we thought. The telephone provided real-time bisynchronous communication. The world changed overnight, and sooo people were getting pizza in 30 minutes or less.

Everything moved forward in a straight line for most of the 20th century. There were a few milestones in asynchronous communication, like the fax machine and the Elvis stamp, but most folks stayed rather enamored with live, two-way communication — unless they had just lost a quarter in a pay phone.

Rocco Zanornmeo

Then some irresponsible entrepreneur invented the answering machine, and suddenly everything started downhill. No one answered the phone. No one rushed from the tub. People just let the machine get it and folks simply stopped talking to each other outside the office. Even worse, although no one realized it at the time, this tool of conversation-avoidance sowed the seeds for the most dreaded, impersonal, productivity-inhibiting invention known to man — phone mail.

Thanks to phone mail, no one communicates anymore. No one converses. No one chats. They pick up the phone, record a message and "send" it via phone mail.

People use phones like fax machines, and conversations are asynchronous once again: Call ... leave a message ... wait for a return message ... then you're "it" again.

Phone tag has become the national pastime. Dialogues that took minutes now take days. Heaven forbid we '90s folk actually risk a voice-to-voice exchange of information. Instead, we just check phone mail and conveniently avoid having to explain to the boss about that $300 item on the expense report for champagne.

With all our gadgetry, it should be easy to keep in touch. We could carry wireless workstations. We could put phones in our cars. We could wear beepers and call back in five minutes. But the fact of the matter is that these products are moving in a direction exactly opposite to our national mood. We don't want to do any of those things. We don't want to be reachable at all times. In fact we'd rather not be reachable at all. Given our druthers, we'll just say what we have to say after the beep and then break the connection.

With everything else going on these days, I guess no one feels like communicating anymore.

A few folks might think I'm all wet. Well, I'm not afraid of a good argument. Go ahead, call me. Give me an earful. And if I'm not there ... leave a message.

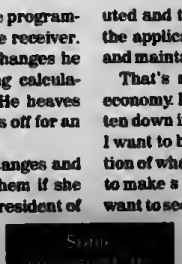
Cohn picks up his messages at a very large computer company in Atlanta.

Cracking the code

ADVENTURES IN INFORMATION *by* Patricia B. Seybold

It's 2 a.m. The phone rings. The programmer curses as he picks up the receiver. There's a bug in one of the changes he made to the new withholding calculations in the payroll system. He heaves himself out of bed and lumbers off for an early morning patch session.

The CEO won't ever see those changes and most likely wouldn't understand them if she did. The same is true for the vice president of human resources and the employees whose paychecks are being calculated. They all think they know what rules were implemented when the new tax laws went into effect, but there really aren't any guarantees.



Scary, isn't it?

It's particularly scary when you stop to think about the hopes we're investing in business process redesign. We debate and struggle to come up with new procedures and policies, and then we hand them off to be implemented in ways that only the technical staff will completely understand. The rules that govern the redesigned business processes will be locked up in application logic, codified in a database and maintained, as our programs have always been maintained, by systems analysts and programmers. Even if the applications are distributed and the implementation is client/server, the application logic will still be locked away and maintained by specialists.

That's not good enough for a knowledge economy. I want the rules of my business written down in English so I can understand them. I want to be able to see a graphic representation of what happens when a customer calls in to make a complaint or order a product. And I want to see what *is* happening, not what's *supposed* to happen.

I want a living, dynamic set of business rules separated out from my data but linked to it actively. I don't want people to have to remind themselves of how we do this or what our policy is on that. I want them to have that information at their fingertips *and* have the ability to change the rules of the game on the fly to satisfy a customer.

Some companies are making progress unlocking the rules of their business, but they're in the minority. I see two approaches afoot. The first is the top-down approach, where you start by modeling your business and its processes using object-oriented techniques. Companies as diverse as John Deere, Merck and Citicorp are creating object simulations of their businesses. Business objects and the rules that govern their behavior are crystal clear to nontechnical people. But mostly these are still models, separate from the applications. It's only when you actually implement the model using object-oriented techniques that your applications and their rules take on the dynamic characteristics of the real world.

The second approach starts with specific applications and uses work-flow technology. Ad agency Young & Rubicam and its clients at Chevron worked on a process redesign to streamline their work together. They implemented the new business processes using work-flow technology. The new rules of the game are codified, implemented in a shared application and visible and changeable by the employees doing the work.

There *are* signs of progress. But they are occurring at the fringes of mainstream computing as firms adopt object-oriented techniques and/or implement rules-based approaches. That's not enough. We need to unlock the rules from all of our applications.

Seybold is president of the Patricia Seybold Office Computing Group in Boston. Her Notes address is Patricia Seybold @ PSOCG. Her Internet address is PSeybold @ MCImail.com.

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Visual Basic language: So far, so good

By Michael Vizard
REDMOND, WASH.

Beta users of Microsoft Corp.'s Visual Basic Applications (VBA) edition report that the language, which will become Microsoft's standard macro language across its applications, is already in a fairly stable format.

Announced during the summer and scheduled for delivery this fall, VBA will be delivered first in Microsoft's Excel 5.0 spreadsheet and Project 4.0 project management software applications. Following these implementations, VBA will be incorporated into all other Microsoft applications.

Don Baarns, *president of Baarns Consulting: 'We're trying to break Excel 5.0'*

However, while VBA will initially be available only for Excel and Project, a Microsoft Word application will be controllable by these applicatioos as a VBA client.

Microsoft does oot inteod to license VBA to other veodors; instead it has opted to use VBA as a competitive tool that will differeotiate its applications from rivals. As such, Microsoft rivals said, VBA is a proprietary language aimed at iocking people into Microsoft applications.

"We just develop with Microsoft applications, but I could see how it would be nice to use VBA with other applications," said Pete Claar, a PC software developer at a large retailer in the Northwest.

However, other osers ooted that porting VBA to multiple applications is a formidable task.

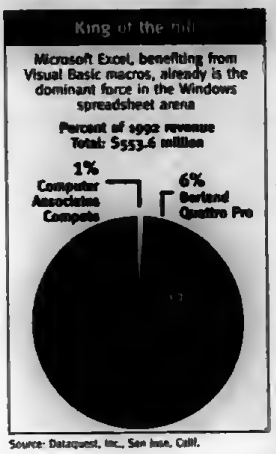
"VBA is not a portable language. It's very tightly integrated with specific applications, and it's not a trivial process to add support for it," said Don Baarns, president of the Baarns Consulting Group, Inc. in Sylmar, Calif., which specializes in developing custom applications based on Excel.

According to Baarns, VBA is a subset of Microsoft's Visual Basic language that has been enhanced with controls specifically aimed at the applicatioo with which it is integrated. "For example, there are a lot of controls that are specific to the Excel spreadsheet metaphor," Baarns ooted.

"I think [people who complain] about VBA are just sour grapes. They don't understand what it takes to make a language like VBA across all applicatioos. Each application has to have its own controls," Baarns said.

Both Claar and Baarns gave the beta version of Excel 5.0 high marks.

"We built custom applications with 10,000 lines of code, so we're trying to break Excel 5.0. But most [people] using standard spreadsheet applications wouldn't know Excel 5.0 was beta code," Baarns said.



Source: Dataquest, Inc., San Jose, Calif.

Stability counts

"I got a pre-beta release, and so far it's pretty stable. There have only been a couple of minor bugs that you would expect to see," Claar said.

Baarns cited a new pivot table feature in Excel as a "noclear feature" that will enhance the analysis toois in Excel. The Pivot tables essentially allow a user to predefine a set of data and then view that data in multiple dimensions simply by clicking on it.

"Previously, you would have to have bought a package like [Lotus Development Corp.'s] Improv to do this kind of analysis," Baarns said.

Meanwhile, Claar cited support for workbooks, in which moltiple worksheets can be consolidated in a single package, as a major new feature. "It's a major enhancement to the worksheet metaphor. It forces you to think of worksheets as a package."

"Microsoft says you can have 256 sheets in a workbook, but we've already put 1,000 sheets in a workbook," Baarns said.

Other key features include the ability to edit sheets directly from VBA and a SQL query language that can be used against data in Excel or against data stored in a SQL database.

"A lot of people store all kinds of things in spreadsheet, like phone lists, that could just as easily be stored in a database," Baarns noted.

Mobile users face nitty-gritty issues

By James Daly
SAN JOSE, CALIF.

Informatioo systems executives attending the recent Mobile World conference were working hard to get past the flash of portable computing without getting burned.

Many of those attending the three-day show acknowledged that while there is a sci-fi appeal to ubiquitous computing, there is a whole range of bread-and-butter concerns that still oeed to be addressed. These include managerial, financial, legislative and societal issues.

"Yoo can't jost throw technology at people and expect them to gobble it up," said Bartoo Goidenberg, presideot of Information Systems Marketing, Inc., a mobile computing research firm in Washington. "And it remains to be seen whether the hypothetical demand is still there."

> The thought of sensitive data's skittering unfettered over the airwaves has given some security managers knots in their stomachs

One important issue concerns the training and support of workers oewly equipped with unfamiliar portable devices such as personal digital assistants (PDA). According to research firm International Data Corp. in Framingham, Mass., support costs can run op to 15 times the purchase price of the original system.

Making new systems such as pen-based devices as intuitive as possible is key. "People need to concentrate on their job, not trying to get their computer to work," said Wayne Warwick, a project manager at the ITT Hartford insurance firm. The $7.3 billion Hartford, Conn.-based firm recently finished a pilot project that could eveotually equip bundreds of agents with pen-based machines to speed the process of risk evaluation.

Building applications for the new machines and tying them into the old legacy systems also remain burdles.

"We still must rely on the traditional IS function to bring everything together," said Ray Mueller, president of the Lakewood, Colo.-based MIS, Inc., which provides data processing services to more than 60 Arby's restaurants throughout Colorado, Wyoming and Florida.

"For instance, there's not a single set of integrated application development tools that we can use to bring everything together."

In addition, the thought of sensitive data's skittering unfettered over the airwaves has give some security managers knots in their stomachs. While encrypting the data does provide an esseotial safeguard, "don't kid yourself,

Mobile users, *page 37*

Multiprocessing for the desktop on tap

By Michael Fitzgerald
IRVINE, CALIF.

A third-tier manufacturer recently introduced a multiprocessing desktop computer and said it would make only those machines from now on, in anticipation of what it hopes will be a trend.

"Everything we do io the future will be multiprocessing — we think it's the only avenue for higher-performance machines," said Thomas Ludwig, chief executive at T&T Research in Irvine, the research division of VTech Computers, Inc. VTech claims sales of $565 million for its PCs and its primary product, game machines.

Most multiprocessing systems today are server systems, though NCR Corp. offers the System 3360, a single-user system that runs oo doal Pentium chips. NCR has targeted Windows NT developers with that product.

Ludwig said VTech would also go after the 90,000 developers who have purchased the NT software developer's kit. Support for multiple processors was built into NT, which makes the software development community a natural target market for multiprocessing desktops.

VTech claims that its dual-processor Intel Corp. 1486-based machines will outperform systems based on a single 66-MHz Pentium chip.

But VTech may find itself stuck in a multiprocessing niche, one user and several analysts said.

George Roukas, director of computer services at a large financial services company, said he does not see the oeed for multiprocessor power on the desktop. "We're not even going to need Pentium at the desktop, at least from what I can see," he said.

"We don't see it as a trend in the next six to 12 months — most multiprocessing stuff is centered around servers and will be for

Multiprocessing, *page 37*

Software

Alpha targets DOS loyalists

By Ed Scannell

Alpha Software Corp. has delivered a new version of its relational database with several new features aimed at corporate developers, believing there is still a lot of life left in the DOS market.

Despite the hype and apparent commercial success of Microsoft Corp.'s Windows-based Access during the last year, Alpha officials said they believe the vast majority of users with 386-based or lower systems still require a DOS-based database that inherently offers greater speed and is easier to program for average users.

Alpha may have a point.

On the strength of its Alpha Four series, the company has climbed into the Top 3 for unit shipments among database suppliers behind Microsoft and Borland International, Inc., selling over a half-million copies.

"We really believe users will continue to rely on DOS databases to solve real-world problems until the hardware gets to the 486 and 8M bytes [of RAM] you need to properly run Windows databases," said Richard Rabins, chairman of Alpha Software.

At least one reseller agreed.

"The good thing about DOS-based programs is they run on almost any machine as opposed to Windows which still has a pretty high base-level requirement," said Rick Scali, president of AIM Computer Systems, Inc. in Daytona Beach, Fla. "Believe it or not, not everyone we sell to needs Windows."

AIM Computer Systems, a value-added reseller, often customizes applications using Alpha Four for various vertical markets, including the medical market.

Added expense

However, many of the company's customers cannot afford the expense sometimes involved with developing more sophisticated applications in graphical environments. Nor can they afford the time it takes to do so.

"Some of our clients can't justify spending thousands developing a custom program. With Alpha, though, we find you don't need to have that kind of investment in programming time," Scali said.

While it likes the chances for DOS-based databases during the next couple of years, Alpha officials concede the inevitability of increased popularity of Windows databases.

Consequently, the company is working on a Windows version of Alpha Four that is scheduled for release sometime in 1994. This product will in no way lessen support of its existing DOS-compatible series.

The lastest version of the program, called Alpha Four Version 3.0, now includes automatic referential integrity, real-time posting, scrollable regions and cascading and conditional lookup tables.

The program's new referential integrity ensures that information put in the parent database is matched by information in any child database for which a link has been established.

This capability prevents matching records from being eliminated or lost if the common field in the parent database has been altered in any way.

Multifile entry function

One of the more important features of the recently released product, according to company officials, is its ability to do multifile data entry. Information can be entered into any field of any database with this capability.

This can add significant speed to data entry while cutting down on the time it takes to develop an application.

Multifile data entry also offers more flexibility with the inclusion of scrollable regions. A scrollable region will display all the matching records from a database in a window that users can scroll through to display all matches.

An example of this capability is an invoice in which all the line items for a customer's purchase can be viewed on-screen at once.

If the invoice has more line items than can fit in that screen, scroll arrows will display to the right of that region so users can move up and down through the window to display every line item.

Designs made easier

Version 3.0 has an Application Outliner intended to make application designs easier.

Custom menu screens are created and each menu choice is given its own submenus or custom scripts, which define what actions will be performed by the selected menu choice.

The new version has a data dictionary that company officials refer to as field rules. Field rules are defined on the database level and are associated with fields in the database, regardless of which data entry screen is being used.

Users can create multiple data entry forms and retain the same rules on each of the forms they create. Field rules will carry over into applications so once they are created, they remain active throughout the manipulation of the database.

WordPerfect version takes on manager tasks

By Michael Vizard

OGDEN, UTAH

One of the little known benefits of the forthcoming WordPerfect 6.0 for Windows is that it can effectively replace the Windows Program Manager using a button bar facility that supports non-WordPerfect Corp. applications, beta users reported.

Announced last month, WordPerfect 6.0 for Windows is expected to give WordPerfect its first truly competitive word processing package for the Windows market [CW, Aug. 30]. It includes the ability to customize the user interface, templates for creating documents, an improved menu structure, coaches that walk users through a task, the ability to preview documents and the new button bar.

Button bar

"You can stay in WordPerfect all day long and access everything else through the button bar," said Joe Malloy, an associate professor of German at Hamilton College in Clinton, N.Y. "I still use the Norton Desktop, but I could see how you could use the button bar to do essentially the same thing."

After creating a link between WordPerfect and other applications, users can place an icon in the WordPerfect button bar that will automatically launch that application when clicked. In addition, users can write macros that automatically launch all the applications in the WordPerfect button bar.

Icon access

For example, Richard George, director of clinical publishing and communications at Synergen, Inc., a biotechnology company in Boulder, Colo., said he has put an icon for the Windows calculator in the button bar to make it easier to access.

Similarly, Malloy reports that he keeps a C-prompt icon in the button bar to access DOS. "The new version is really nice, but I still find it slow compared to DOS for some things."

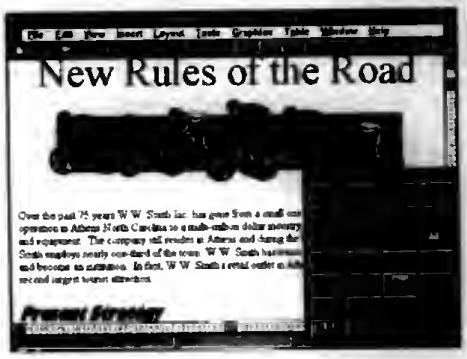
However, George noted that non-WordPerfect applications are stored in different formats. As such, he relies more on the Open Dialog facility for sharing data between applications.

"You can either use the Clipboard facility in Windows or convert the data into a file format that is supported by WordPerfect," George noted.

WordPerfect 6.0 for Windows is expected to ship this month and is priced at $495.

Automation agents

While Microsoft is adding agents that automate specific tasks in the next version of Word, WordPerfect has opted to deploy Coaches that show a user how to perform a particular task. WordPerfect officials concede, however, that they will be automating tasks in future releases.



WordPerfect 6.0: *Users can place an icon in the button bar that automatically launches an application*

WorkSheet tracks trading

By Michael Vizard

NEW YORK

Traders at Midland Global Markets, a subsidiary of The Hong Kong & Shanghai Banking Corp., are adopting technology that has been used in the scientific and engineering community to help them analyze trading patterns.

Using a graphical spreadsheet called the Expo WorkSheet, developed by Leading Market Technologies, Inc. in New York for Windows and Unix workstations, currency traders at Midland Global Markets have been performing what-if scenario analyses to determine when to buy and sell particular currencies.

Currency trader Roberto Vidal said the Expo WorkSheet, which is based on the same technology as data analysis software from DSP Development Corp. in Cambridge, Mass., is better suited for this type of analysis than the standard spreadsheet. This is because it has a real-time analytical engine that allows him to respond quickly to market changes by monitoring graphics that are connected to the engine.

Currently, Vidal runs Expo WorkSheet on a DECstation 5000 class system from Digital Equipment Corp., but he said he intends to deploy a Windows version in the short term.

"My DECstation doesn't support data feeds, so I'd like to put Expo WorkSheet up on a Windows system and connect it to the Knight-Ridder service," Vidal said.

Expo WorkSheet prices start at $2,995.

Mobile users

CONTINUED FROM PAGE 35

you're not going to duplicate the type of security you have on a mainframe," said Tom DeWald, manager of technical development at Mastercard International, Inc. in St. Louis.

Cost-justifying new portables also presents a challenge, especially with newcomers like PDAs. That task could become easier in the next year to 18 months when more companies begin to offer content services, such as the ability to tap into an array of databases or schedule travel.

"I think the day is not too far off when, for a flat fee of, say, $29.99 a month the user will be offered a whole host of services," said Harriet Donnelly, managing director of personal communicator business development at AT&T in Parsippany, N.J.

Analysts said the allure is strong for companies to provide expansive offerings in this field of content services.

"Hardware will become commodity-like," said Richard Silber, who directs Norwell, Mass.-based BIS Strategic Decisions' Mobile and Wireless Communications Market Advisory Service. "The serious money will come from recurring service revennes. That's where you'll find the billion-dollar baby."

The result? Many people will fence-sit until the portable infrastructure is more clearly developed. "We're in an age of unpredictability, so we're not ready to place our bets just yet," said one attendee who requested anonymity.

But when these fixtures are put in place, analysts such as Raymond Boggs at BIS Strategic Decisions said they expect emerging products like PDAs to appeal strongly to advanced corporate users with a serious interest in communications.

"The corporate mobile worker represents a growing potential market," Boggs said. "They have very real technology needs."

Multiprocessing

CONTINUED FROM PAGE 35

some time," said Randal Giusto, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

Giusto added that multiprocessing on the desktop makes little sense because "about the only place it might be attractive right now is for folks running workstation applications. For a Windows-based machine, I don't see a need for it."

VTech has adopted an aggressive price on its Platinum SMP system, however, which might draw some interest from users. A base model system with 33/66-MHz dual-DX2 processors costs $3,999.

"MP is just a way of turbocharging your system," Ludwig said.

The architecture uses a shared-cache design, which saves VTech money because the company does not have to install dedicated cache support for each processor, Ludwig said. Because of the shared-cache architecture, the Platinum does not scale beyond two processors.

VTech will add Ethernet and audio support to the Platinum series before the end of the year, Ludwig said.

Briefs

Special effects

WordPerfect Corp.'s WordPerfect 6.0 will include a text-manipulation application called TextArt. Jointly developed with Bitstream, Inc., TextArt lets users create special effects with type by giving them the option of choosing from among 40 different shapes. Users can then add colors, fills and shadows to the shapes. TextArt is an Object Linking and Embedding miniapplication that will be accessible from the default button bar of WordPerfect 6.0. That latest edition of the venerable word processor is slated to ship in the fourth quarter. Bitstream will also ship a collection of 100 True Type fonts called the WordPerfect for Windows 6.0 Font Pack for $29.95.

PC-based postal kiosk axed

By Gary H. Anthes
WASHINGTON

The U.S. Postal Service has pulled the plug on the Postal Buddy, a user-friendly, PC-based talking kiosk that processed change-of-address forms and dispensed stamps and other items at 183 post offices, supermarkets and shopping centers around the country.

The Postal Buddy, introduced last December, was cited by Vice President Al Gore in his recent report on "reinventing government" as an example of how information technology can bring government services conveniently to the public.

The Postal Service issued a terse statement in which it declined to elaborate, saying it had canceled its agreement with Postal Buddy Corp. in San Diego because the interactive multimedia devices had failed to meet revenue projections of $35 to $55 per kiosk per day. They were bringing in just $15 to $30 each per day, far below the $42 point at which the company was to have begun sharing revenue with the Postal Service, the statement said.

Sidney Goodman, Postal Buddy Corp. president, said a recent advertising campaign had pushed revenue to more than $40 per machine per day at the time of contract termination. He said revenue was never intended to justify the kiosk.

"It was to have been a no-cost program for them for which revenue sharing was to have been the icing on the cake," he said.

Indeed, a Postal Service spokesman told *Computerworld* last December that revenue was not important and that the machine's main purpose was to help the Postal Service streamline the processing of 42 million address changes annually. These cost the Postal Service $1.3 billion [CW, Dec. 21, 1992].

The Postal Service said last year it expected 10,000 Postal Buddies to eventually process half of all address changes, saving the service between $300 million and $500 million in data-entry labor during the 8½-year contract.

Postal Buddy *was only bringing in $15 to $30 per day, short of the $42 figure at which the Post Office would have made some money*

Partnerships hurt

Goodman added that the sudden and arbitrary cancellation will have a chilling effect on similar government/industry partnerships.

"Here's a program that the vice president's office held up as a model. Terminating it in a whimsical fashion like this may deal a fatal blow to any such venture ever planned," he said.

Goodman said he anticipated the Postal Buddy would be put back in service.

"I guess it's probably not over," a Postal Service spokesman said last week. "But it's in the hands of the lawyers now."

Farewell, buddy

Postal Buddy was built around an Intel Corp. 1486 microprocessor running OS/2 and an Intel i750 Digital Video Interactive chip for audio, video and high-resolution graphics. It held 27 internal peripherals including disk drives, a modem, a color monitor, a credit-card reader, a postage stamp dispenser and printers.

Using voice and video prompts, Postal Buddy guided users to enter change-of-address information via keyboard and touch-screen sensors. Addresses were validated locally by scanning a database of 130 million addresses for "ZIP + 4" codes.

A communication server at Postal Buddy Corp. retrieved address changes via telephone each night. After additional validation, the address changes were sent electronically to the Postal Service's computerized mail-forwarding system at the National Address Information Center in Memphis. From there, address change data was sent electronically or by paper to businesses selected by the user. —*Gary H. Anthes*

High-tech tools help report on low-tech war

By Michael Fitzgerald
ZAGREB CROATIA

Serbian forces shipped a little forget-me-not here two weeks ago — five missiles — startling the populace in this war-torn capital, which has been quiet for some time.

For Dave Manney, it is just part of the job.

Manney has been roaming Croatia and Bosnia since April as a journalist/fund-raiser for Mercy International-Americas, a nonpartisan relief agency that distributes food, medical supplies and the like to refugees from all sides. He reports on refugees, hospitals and the work that Mercy international does in exchange for having its toll-free number printed or shown at the end of his articles.

His stories have had an impact. One piece, published in a footwear trade magazine, prompted a donation of some $75,000 in shoes from Reebok International Ltd. and other companies.

Manney uses a 3170 notebook computer donated by NCR Corp. He also takes photographs and videos. He sends stories not via modem but by fax, using BitFax 2.0 from Bit Software, Inc. in Fremont, Calif.

Hard copy

Manney said he faxes stories because editors prefer to see stories in hard copy. Phone lines in Croatia are generally reliable, he added.

The notebook is handy because Zagreb has power for only six hours even on good days. Manney said the 3170's dual battery pack has allowed him to work and file stories despite the power situation in Croatia and Bosnia.

Manney said he does not go anywhere that United Nations forces have not gone first.

"The places I go are safe by Bosnian standards," he said, hastening to add, "Anybody who's over here is either a Western war correspondent or they're just stupid."

Dave Manney *uses an NCR 3170 notebook in his work on behalf of Mercy International-Americas in the former Yugoslavia*

While Europe's 220W power grid fried Manney's portable printer despite a 110W to 220W adapter, the notebook has handled the shift without trouble. The notebook also endured a direct hit from a drunk driver whose vehicle rear-ended Manney's car in Bosnia.

Manney once drove through sniper fire with his notebook between his head and the car door, hoping the notebook's paramagnesium might prove bulletproof

Manney returns to North America this week to set up a traveling exhibit about the Balkan War. He expects to return to Croatia in three weeks, barring another outbreak of war there.

After that, he heads to "Pakistan and Afghanistan and some of the former Soviet republics," he said. "All the garden spots."

Mercy International-Americas can be reached at (800) 465-0088.

IBM to build systems for Inmac

Distributor plans PC foray in U.S. market

IBM recently announced its first effort to make build-to-order PCs for another vendor: its Austin Industrial Business Center will begin building systems for Inmac Corp.

Inmac, a distributor of computer products that has not previously sold PCs in the U.S., will initially offer four models of the Inmac Insignia based around Intel Corp.'s 33/50-MHz 1486DX and 33/66-MHz DX2 chips and IBM's 25/50-MHz 486SLC2 processor.

Base configurations will range in price from $1,299 to $2,599. The Austin Industrial Business Center currently makes PCs for Lexmark International, Inc., Reply Corp. and CompuAdd Corp., but not on a build-to-order basis. It also builds the RS/6000 and motherboards for the IBM PC Co.

— *Michael Fitzgerald*

Lotus launches Ami Pro on Unix

By Michael Vizard
CAMBRIDGE, MASS

Lotus Development Corp. has a version of its Ami Pro word processing software on Unix for Hewlett-Packard Co. systems. Implementations for Unix systems from IBM and Sun Microsystems, Inc. are due in early 1994.

Ami Pro includes support for a Link, Embed and Launch-to-edit (LEL) interface, which will allow Notes users on Windows systems to view and print Ami Pro documents using a facility that is similar to Version 1.0 of the Microsoft Corp. Object Linking and Embedding interface in Windows. However, to edit that data, users would have to have an LEL-enabled application.

In addition, Lotus said it will not support LEL on its 1-2-3 for Unix spreadsheet until it delivers a portable 1-2-3 implementation that will share the same code base on all platforms. Company officials declined to say when this project would come to fruition.

No other applications currently support LEL, but Lotus plans to make available an LEL developer's kit later this year.

Ami Pro for HP/UX, priced at $495, will be available in the fourth quarter.

Hardware

NCR Corp. has introduced NCR 3227, a compact Intel Corp. 486-based desktop workstation.

According to Dayton, Ohio-based NCR, the product is a full-function, standard AT-bus workstation that can grow as users' needs change, with RAM expandable up to 32M bytes.

Key features include VESA-standard local bus video with Windows acceleration, two serial ports, a parallel port as well as a mouse, keyboard and VGA connectors.

The NCR 3227 has a footprint of 12 by 12.2 by 2.5 inches and supports a variety of 1486 microprocessors ranging from 25 MHz to 66 MHz to Intel Corp.'s Peutium OverDrive processors.

The NCR 3227 was designed to comply with the Environmental Protectiou Agency's Energy Star program for low energy use.

Prices start at $890.

▶ *NCR*
(513) 445-5000

E-Machines, a division of **SuperMac Technology, Inc.**, has introduced EtherDock, a portable docking station.

According to the Sunnyvale, Calif., company, EtherDock is the only docking station for the Apple Computer, Inc. PowerBook portable computer that is complete with onboard Ethernet support.

Capabilities include two serial ports, a port for an external floppy drive, a SCSI connector for adding an external hard drive, CD-ROM scanner and an audio in/out connector for adding sound to the desktop. Full 10BaseT Ethernet support is also included.

Additional hardware is uot necessary because EtherDock provides the ports and connections needed for desktop use, the company said.

EtherDock costs $699.

▶ *E-Machines*
(408) 541-6100

Software

Decisioneering, Inc. has introduced Crystal Ball, a general-purpose forecasting and risk analysis software package that helps users make decisions based on Lotus Development Corp.'s 1-2-3 Release 4 for Windows spreadsheets.

Instead of just a single number, Crystal Ball illustrates forecasts numerically and graphically, displaying the entire range of possible outcomes, the Denver company reported.

Users can apply either a range of values or a probability distribution to each spreadsheet cell containing an uncertain number. Random values for each of these cells is generated according to the specified range or probability distribution. The product can graphically display the distribution of the results.

Crystal Ball for 1-2-3 Release 4 for Windows costs $295.

▶ *Decisioneering*
(303) 292-2291

Jurisoft, a division of **Mead Data Central, Inc.**, has introduced CompareRite 5.0, a PC-based software program.

According to the Cambridge, Mass., company, the product was designed to quickly and accurately compare revised versions of the same word processing document.

CompareRite 5.0 is redlining software that can support Windows and DOS environments on one program. It also compares and highlights changes within documents created in the same or different word processing environments.

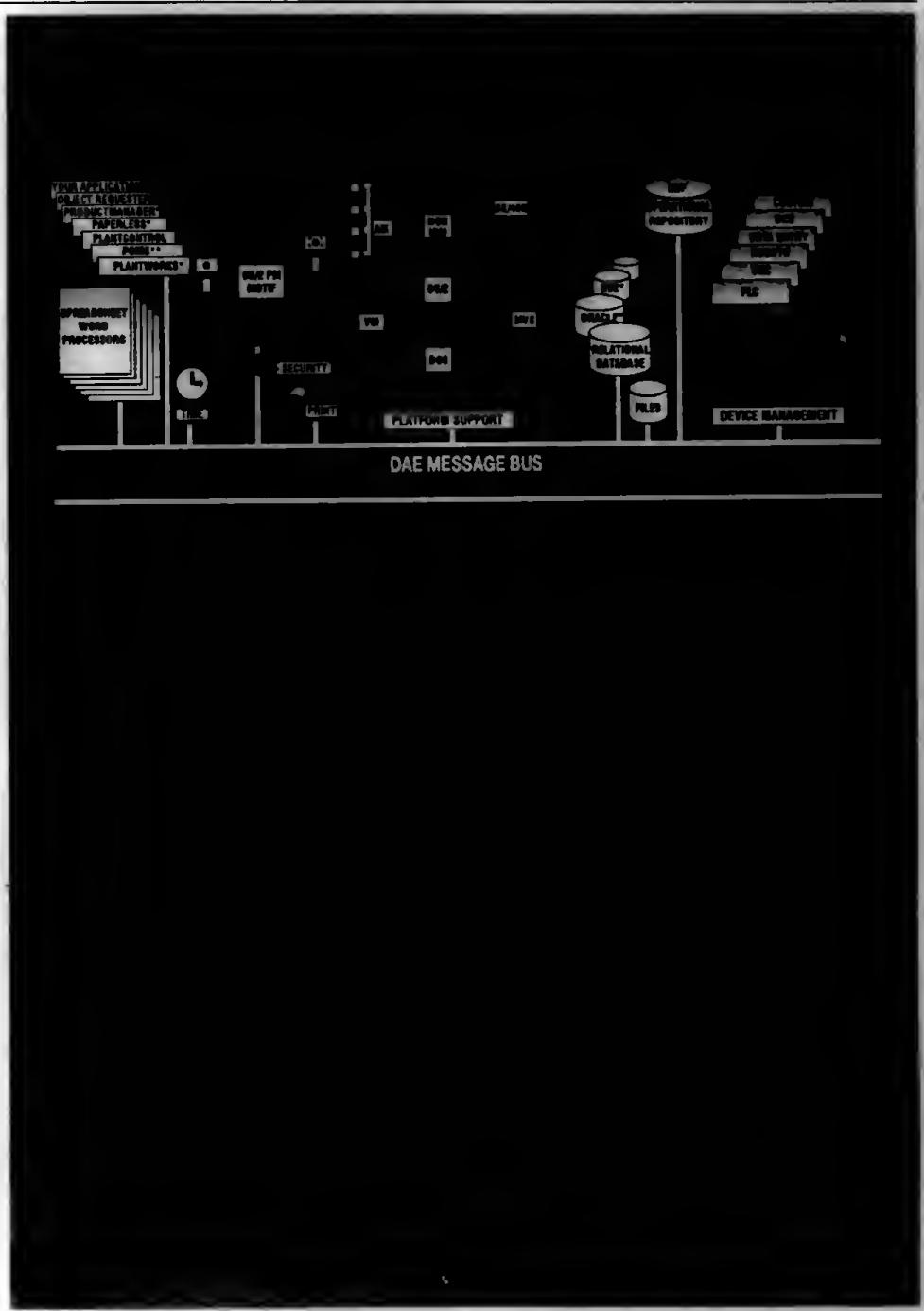
The product can also compare footnotes, view additions and deletions side by side and use a variety of styles to present differences between documents, including italics, boldface, underlining, quotations and brackets.

CompareRite 5.0 software is priced at $189.

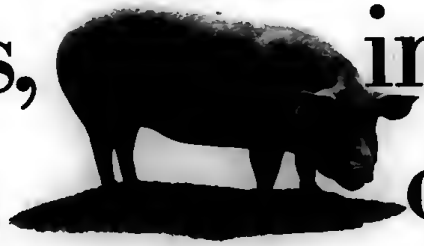
▶ *Jurisoft*
(617) 864-6151

Product short

Sharp Electronics Corp. has introduced JX-325, a full-color, flatbed scanner. JX-325 features 24-bit color, 300 by 600 dots per inch resolution, single-pass scanning and compliance with the SCSI-2 standard. The product is bundled with Adobe Systems, Inc.'s Adobe PhotoShop. Cost: $1,295 for the Macintosh bundle and $1,395 for the PC bundle. Sharp Electronics, Mahwah, N.J. (201) 529-9583.



What makes Wall Street touch with the latest dynamics currencies, commodities strange things most of

savvy enough to always be in of companies,  industries, and all those other us don't understand?

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Users give LAN Server thumbs up

By Elisabeth Horwitt
AUSTIN, TEXAS

If IBM's OS/2 LAN Server fails to make it as a dominant network operating system, it will not be due to functional deficiencies, according to two companies that have been using it for a year or more.

While IBM recently claimed that LAN Server is second only to Novell, Inc.'s NetWare in market share, it is a very far second — about 6% last year, compared with Novell's 67%, analysts said.

And as a comparatively late starter in the client/server arena, LAN Server faces an uphill battle as it carves out a market for itself, with the exception of "Big Blue accounts that laid their [computing] strategy at IBM's doorstep and said 'Here's what I want, give me everything I want,'" said Dick Dionne-Keay, an industrial analyst at Summit Strategies, Inc., a Boston research company.

LAN Server users confirmed that they chose IBM's network operating system partially because they believed IBM would provide the best connections between their client/server systems and IBM's own mainframes. However, they affirmed that the platform itself has strengths, particularly when it comes to supporting demanding mission-critical applications.

What it takes

IBM last week announced a program for certifying that software developers and systems integrators have the requisite skills in OS/2 and LAN Server engineering and application development.

Running at railroad

The Atchison, Topeka and Santa Fe Railway Co., for example, has been using LAN Server and OS/2 applications to run critical applications, including those for customer service and the one that runs the railroad at the systems operations center in Schaumburg, Ill. "We feel that [the OS/2 LAN Server-based platform] is an industrial-grade implementation that works," said Don Harrison, director of quality assurance for the railroad's management services department.

The railroad uses NetWare as its office systems platform for applications such as word processing; however, the DOS-based Novell platform lacks key features, such as multithreading, that the railroad needs for its mission-critical applications, Harrison said.

More recently, the railroad implemented LAN Server, in combination with OS/2 and IBM's Callpath PBX-to-LAN software, as the basis for its customer service and call center management application. In this case, IBM's network operating system was selected because it went with the application environment that seemed to work best with this new application.

System was a success

The resulting system "was one of the most successful we implemented," Harrison said. "It was basically done in six months from design to implementation, and it went up without any problems."

"LAN Server 3.0 has met all our needs so far in terms of performance, reliability, plus the SNA connection is a big plus," said Carlos Reyes, manager of data communications technical services. The railroad is now using OS/2 Communication Server's LU6.2 connections to its mainframe DB2 databases.

"We have a strategic architecture plan which is reviewed every six months; as of now, our platform is OS/2, and we'd have to have a compelling reason to change," Harrison said.

The railroad is also extremely inter-

LAN Server, *page 49*

KFC does financials right, moves accounts to client/server

By Kim S. Nash
LOUISVILLE, KY.

What if the Colonel's latest secret recipe isn't packing 'em in Down Under? New accounting and inventory systems now let managers at KFC Corp. headquarters here change marketing tacks in Australia — putting dollar-off coupons in local papers, for example — several days or weeks sooner than they could before.

That is because Australian KFC sites have installed a faster financial system that has more functions than the IBM System/36-based system the fast-food chain previously used. Client/server accounting applications from Seattle-based FourGen Software, Inc. are the new kids on the block. The FourGen software will run in parallel in Australia with a legacy system for at least a year, until KFC is satisfied that it is glitch-free.

Meanwhile, KFC, a division of Pepsico, Inc., is a year into replacing a mishmash of homegrown and hypermodified accounting systems that run on mainframes and minicomputers more than two decades old. Yes, client/server is the mandate. But more importantly, incoming software and hardware is standardized across KFC's 10 business units worldwide.

ON SITE

KFC Corp.
Louisville, Ky.

Challenge: To wean accounting departments at 10 units worldwide from a mishmash of 25-year-old mainframe and minicomputer gear to company-standard hardware and software.

Technology: HP 9000 Unix-based servers, PCs, FourGen financial applications, Informix databases.

Results: While units in Puerto Rico and Mexico and headquarters in Louisville install standardized systems, KFC's Australia unit has been able to give managers sales and other reports days and sometimes weeks faster.

"We grew a hodgepodge [of financial systems] over the years, and now it's an *old* hodgepodge," said Ken Harris, vice president of worldwide information services.

Eighteen months ago, KFC's information systems staff sat down with managers and end users to outline specifications for new accounting applications. Hardware and relational databases were chosen a couple years before: Hewlett-Packard Co. HP 9000 Unix-based servers and workstations loaded with Informix Software, Inc. databases.

Tools closed sale

Informix's development tools sold KFC on the database. "At the time we were looking around, Oracle and Sybase had little to offer in that area," Harris said. Oracle Corp. offered computer-aided software engineering products, but Harris said they were not robust enough. Sybase, Inc., meanwhile, only recently unified its tools strategy.

On the hardware side, KFC likes the scalability of HP servers, said Bill Melvin, manager of financial systems development. KFC units run the gamut from very small eight- to 10-user sites to 100-user units. "HP fits at all those places," Melvin said.

Any new financial packages had to work within those parameters, Melvin said. He said he wants ultimately to integrate accounting with several operations systems built in-house under Informix during the past few years, such as retail and inventory applications.

FourGen fit the technological bill. The applications were built with Informix-4GL and related development tools and require the Informix On-Line database. Among the benefits expected from installing identical systems worldwide is a decrease in IS and end-user training costs, Harris noted.

FourGen also met KFC's desire for a smaller vendor with which a large worldwide contract would carry weight.

"We wanted a company that would take our business requirements into consideration as they developed the products," Harris said. For its 10 years in business, it has just about 40 major customers, according to Gary Gagliardi, FourGen president.

Life will not change much for cash register clerks at KFC outlets when the new software is completely installed.

The real differences will come behind the scenes, where store and business unit managers can get inventory and sales reports back to headquarters faster.

The graphical interface of FourGen general ledger, accounts payable and receivable and other modules lets users more easily navigate the system themselves, he explained.

For example, Australia's installation has shed light on more efficient marketing opportunities.

"From a planning perspective, we can ask questions as specific as 'What's the profit margin of X new product around the world?'" Melvin explained. "We couldn't get at that kind of information quickly enough before."

Data on food sales and promotions is collected and manipulated continuously. Some of it is accessible locally, too, which is a huge change from periodic batch processing. "We know how customers are voting with their pocketbooks and how to better capitalize on that," Harris said.

Once FourGen is fully rolled out, KFC hopes to slice "several weeks" from the time it normally takes to close the books worldwide at the end of a fiscal year.

As for financial payback, 18 months to two years "is a reasonable time period" by which to break even on the company's FourGen investment, Harris said. He declined to specify how much money has gone into the project so far.

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DG unveils Clariion for NetWare

By Craig Stedman
WESTBORO, MASS.

■ Data General Corp. last week introduced versions of its Clariion Series 2000 redundant arrays of inexpensive disks (RAID) targeted at servers running Novell, Inc.'s NetWare. DG also said it expects to add support for Microsoft Corp.'s Windows NT operating system by mid-1994.

The Clariion array has been sold for use with DG's Aviion systems and Unix machines from Sun Microsystems, Inc. and IBM for the past year. The company is now trying to broaden the market for the product as part of an effort to build Clariion into a stand-alone OEM business that augments its systems sales.

Joe Uniejewski, director of marketing at the Clariion business unit of DG, noted that the NetWare storage market is expected to grow at a faster rate than the Unix sector due to the prevalence of NetWare-based PC LANs and their burgeoning capacity needs.

Competition tough

Jim Porter, president of Disk/Trend, inc., a storage market research firm in Mountain View, Calif., agreed that NetWare arrays have "certainly got a whole lot more customer potential" than Unix subsystems.

However, Porter added that the NetWare market is also much more competitive. There are already about 30 companies selling NetWare-enabled arrays, compared with a dozen or so Unix vendors, he said. A wider range of product options is also available for NetWare, particularly at the low end.

Porter said Clariion would fit in among "the upper class" of NetWare arrays, due to its high level of fault tolerance and the fact that DG's prices "are not the cheapest." He noted, however, that the pricing should be competitive with other vendors at the top of the market, such as IBM, Hewlett-Packard Co., Digital Equipment Corp. and NCR Corp.

Cost is an issue for Richard Duke, director of data services at St. Patrick Hospital in Missoula, Mont., which uses DG's first-generation RAID array with its Aviion systems. Duke said Clariion for NetWare "is intriguing to me, but not intriguing enough right now to pay the bigger price."

Instead, the hospital uses low-end arrays from Micropolis Corp. with its NetWare LAN. Duke noted that he is paying less than $6,000 for a second 3G-byte Micropolis array that is due to be installed shortly. In comparison, a 2.5G-byte Clariion unit has a list price of $28,000.

Source: Data General Corp.

Price not a factor

Price is less of a constraint for Mitchell Stevelman, vice president of MIS at High Yield Management Securities, Inc. in Clifton, N.J. He said he expects to put Clariion for NetWare arrays into the company's regional offices over time. A Unix model that High Yield now has "works really well," he noted.

The NetWare versions of the disk array and a companion tape unit use the same base hardware as the Unix products, with added support for a caching feature that is under development, Uniejewski said. The arrays will be certified for both NetWare v3.11 and NetWare 4.0 when they ship late this month, Uniejewski added.

Storage Dimensions releases low-priced RAID-5 for NetWare

By Stephen P. Klett Jr.
MILPITAS, CALIF

Storage Dimensions is slated to show redundant arrays of inexpensive disks (RAID) Level 5 software for small Novell, Inc. NetWare-based networks at NetWorld Dallas '93 this week. The software is intended to win over users wary of the high costs associated with RAID-5 technology.

Designed for networks with capacity needs from 2G bytes to 30G bytes, LANStor RAIDMaster marks Storage Dimensions' first foray into the software array market. The company also offers a hardware array, called LANStor Continua, which makes it the only vendor that sells both hardware and software RAID systems, according to industry observers.

"The Continua array has been popular among large corporations involved in downsizing to LANs but has been too expensive for users on the low end," said Greg Brashier, director of the LANStor business unit.

Citing internal benchmarks, Storage Dimensions claims that RAIDMaster's throughput levels are 45% to 75% higher than those of competing software arrays from Corel Corp. and Chantal Systems.

In the event of a system failure, Brashier said, RAIDMaster can reconstruct a 4G-byte array in 28 minutes. A scheduling feature allows network managers to balance network load with data reconstruction needs. For example, network administrators can assign from 10% to 100% of the CPU cycles to array rebuilds. In addition, failed drives can be replaced without interrupting data access.

RAIDMaster also allows users to select data block transfer sizes, ranging from 4K to 64K bytes, allowing them to match performance of different block sizes to specific applications.

Eliminates extra cost

The bulk of the cost associated with RAID systems comes from having to buy disk drives and controllers compatible with the vendor's array software. Software arrays eliminate this expense by allowing users to turn their hard drives into a RAID system.

For example, a user with three Extended Industry Standard Architecture (EISA)-based SCSI drives can load the RAIDMaster software and have a RAID-5 system with about 1G byte of storage for $895. In comparison, a 2G-byte configuration of LANStor Continua costs roughly $15,600.

However, for larger networks where performance is the No. 1 consideration, hardware arrays are the ideal choice, said Bob Abraham, vice president of the market research firm Freeman Associates, Inc. in Santa Barbara, Calif.

Hardware arrays provide better performance on large-scale read/writes because the hardware and software are optimized for each other, he said. Another plus is that while software arrays use the host computer's CPU to manage the array, hardware arrays have their own processor board, which adds to the cost but improves performance.

"The management portion of software arrays has to be more universal in nature to work on a variety of hardware platforms," he said. "The main advantage of a software array is cost. If properly done, they are scalable and have considerable appeal for those users on the fence."

RAIDMaster is available now, bundled with either an EISA or Micro Channel Architecture host adapter from Storage Dimensions. An independent version compatible with all manufacturers' adapter cards is slated for Nov. 1.

Through Dec. 31, the bundled version will start at $595, and the stand-alone version will cost $295. Thereafter, the array will start at $895 and $595, respectively.

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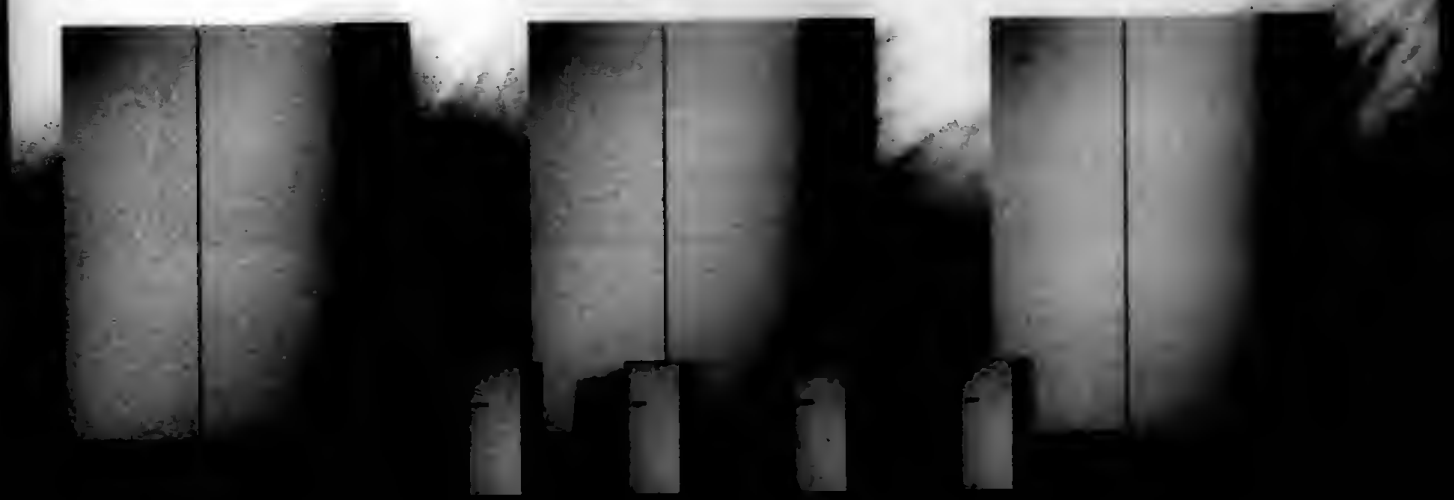

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Token Ring quickly gaining speed

By Lynda Radosevich

● Token Ring vendors are stepping forward to offer users a higher-speed future.

For instance, Proteon, Inc. unveiled a new line of Token Ring adapters last week based on recently introduced Texas Instruments, Inc. technology. Also, IBM and Proteon made proposals to the IEEE 802.5 committee last week to adapt an evolving 100M bit/sec. technology from Hewlett-Packard Co. and AT&T for Token Ring frames [CW, Sept. 27].

The Proteon Token Ring announcements are aimed at IBM mainframe shops with 1,000 or more employees, which compose the majority of Token Ring users, according to Karyn Mashima, vice president of corporate marketing at Proteon.

Applications driving the technology include imaging, specifically in the banking and insurance industries. Also, multitasking operating systems, complex graphical user interfaces and, somewhere down the road, multimedia applications will tax current Token Ring network servers, Mashima added.

Proteon's first step to meet that need and regain the second-place market position it lost in 1992 (see chart) was to introduce its ProNet line of 4M and 16M bit/sec. adapters last week. The adapters include a slot for an optional network accelerator chip from TI called the PacketBlaster that accelerates small-frame transmit and receive rates.

The ProNet line also includes software drivers that boost throughput by 24%, whether or not a user opts for the TI chips, Proteon said.

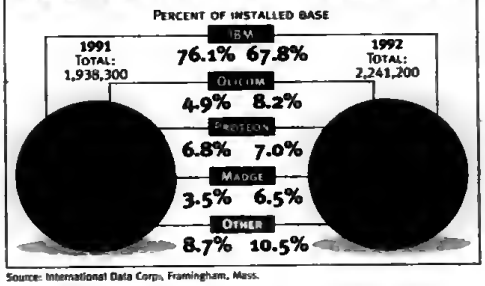
The ProNet 4/16 Plus for XT/AT bus computers lists for $665 and is available now from resellers. A $750 card for Extended Industry Standard Architecture bus computers will ship in November, and a $665 version for Micro Channel-bus PCs will ship in December. However, the actual PacketBlaster chip will not be available until the first quarter of 1994.

Meanwhile, IBM and Proteon both proposed to the IEEE 802.5 committee extensions to the 100M bit/sec. HP/AT&T technology called 100BaseVG. In July 100BaseVG was awarded its own IEEE standards committee, the 802.12.

The proposals seek to use 100-BaseVG's prioritization scheme, which already resembles Token Ring's prioritization, and adapt it to Token Ring frames. The IBM proposal, which is backed by HP, is called 100VG-AnyLAN.

Lighter heavyweight

While IBM's share of the Token Ring market is still huge, it's slipping



Source: International Data Corp., Framingham, Mass.

Too close for comfort

The question some users and analysts pose, however, is whether there is room in the market for the ever increasing numbers of high-speed networking technologies, including the Asynchronous Transfer Mode and Fiber Distributed Data Interface, and two types of Ethernet-style 100M bit/sec. networks.

"This is the technological equivalent of the pet rock. Nobody knows how the users will migrate. It's a $20 billion market, and vendors are saying 'Let's build a big fence and hope users run into it.' The vendors will hedge their bets by having as broad a range as possible," said Tom Nolle, president of the consulting company CIMI Corp. in Voorhees, N.J.

Proteon officials said they will deliver Token Ring and Ethernet adapters based on 100BaseVG beginning in mid-1994.

Separately, Proteon officials outlined the following product plans for 1994:

- A combined Ethernet/Token Ring adapter for portable computers with PCMCIA slots in mid-1994.
- Adapters designed to plug in to the Peripheral Component Interface slot on the local bus of Intel Corp. Pentium-based computers in mid-1994.
- A 100BaseVG and ATM hub/router (no time frame given).

LAN Server

CONTINUED FROM PAGE 43

ested in IBM's systems management strategy, which will enable NetView users to manage LAN Server and OS/2 networks using the soon-to-be-announced LAN NetView as a go-between.

"It's very important to us that we have tools in place to manage our client/server environment; it looks to us that IBM is attempting to do that," Harrison said.

One large California organization has been using LAN Server to provide files, mainframe access and all software to a community of diskless DOS PCs.

Like the railroad, the organization is impressed with the robustness of the OS/2-based platform, "particularly Version 3.0; Version 1.0, which we started with, was not so good," said a manager in that group.

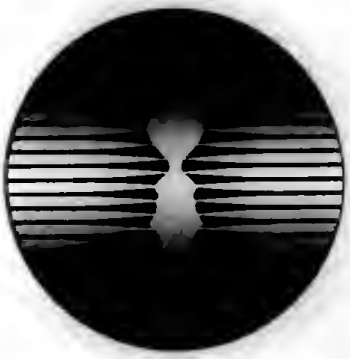
With 3.0's protected mode, applications are safer than in a Windows or DOS-based platform, he said.

NetWare more expensive

The firm looked at Novell when it was choosing a network operating system about 18 months ago and found NetWare to be much more expensive.

IBM also provides the platform with a low-cost host gateway via OS/2 Communications Server, which now resides on the same LAN Server platform as the file server, the manager said.

When asked what else he wanted to see IBM provide for its server, the manager replied: "As with any other product, we want it [to be] faster."



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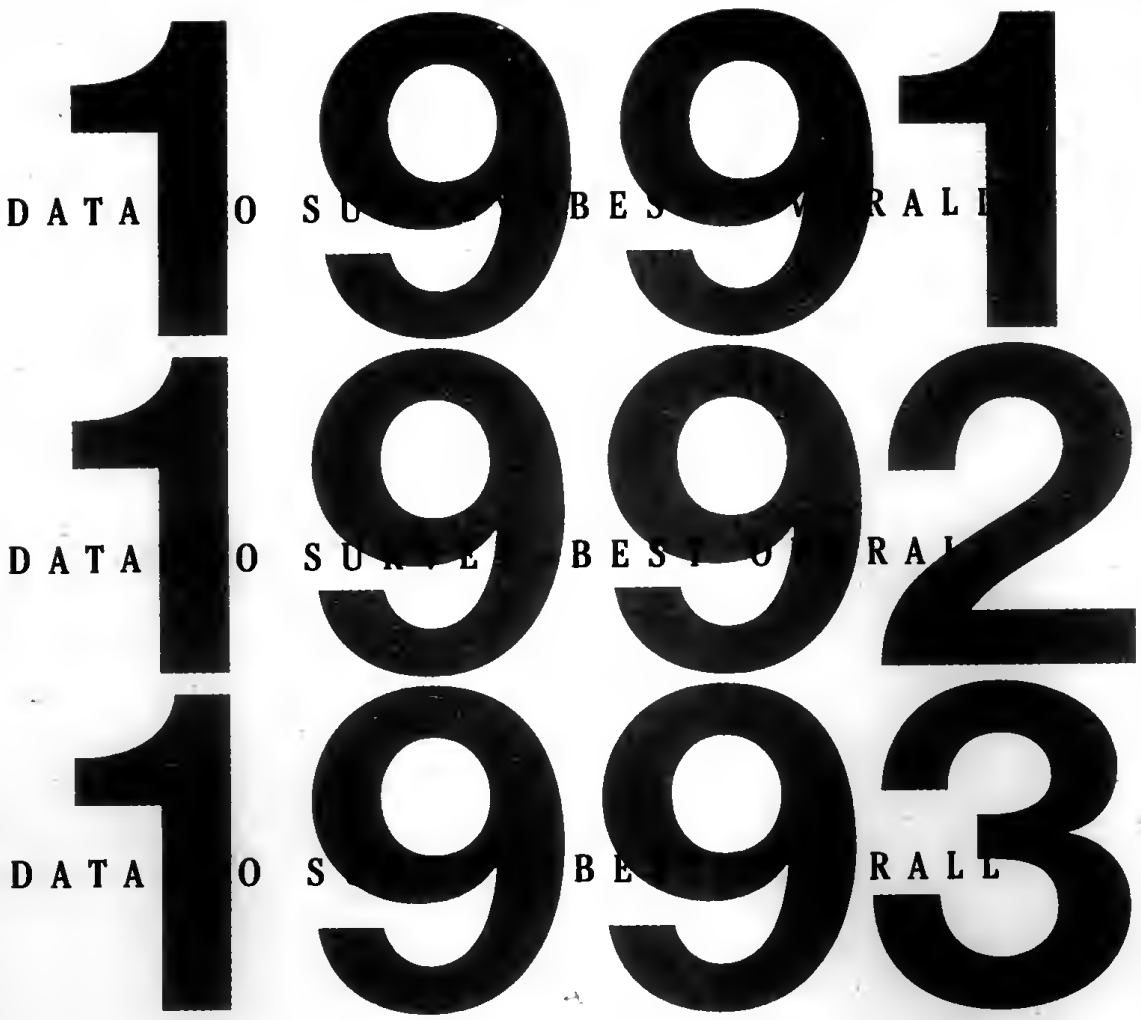

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Hitachi Data Systems markets intermediate and large industry-standard mainframe computers, and disk, cartridge tape and semiconductor storage systems.

[redacted]

Compuware Corp. has announced EcoChargeback, an integrated resource accounting system for client/server Unix and relational database environments.

EcoChargeback correlates database resource use with Unix accounting data, according to the Farmington Hills, Mich., company. Database and Unix accounting information is collected by the product's agents and stored in a centralized accounting database.

Information can be retrieved from the database by user, application, workgroup, database or server.

Prices start at $8,000.

▶ *Compuware Corp.*
(313) 737-7300

Workflow Systems, Inc. has announced the FlowLogic/Work Operating System.

According to the Burlington, Mass., company, the product allows applications such as document management systems to interface seamlessly with project management, product configuration management, electronic time card and logistics management systems.

All data including text, images, spreadsheet and computer-aided design and engineering is managed in its native form via third-party vendor tools for tasks such as viewing, editing and redlining.

The FlowLogic system can also model and manage processes such as inventory management, document management, project management and engineering change control.

FlowLogic costs $1,000 per seat.

▶ *Workflow Systems*
(617) 272-8150

Unisys Corp. has announced the entry-level InfoImage Folder, an electronic file-folder management system that accommodates business-size and large-format documents.

According to the Blue Bell, Pa., firm, InfoImage Folder was designed for use as a pilot configuration by clients interested in evaluating imaging technology and its potential applications in their enterprises.

The configuration can expand to support additional departmental applications and users.

The eight-user Imaging Server Starter Kit, which includes all the Unix-based InfoImage Folder server software and the Event Manager work-flow software, costs $18,048.

▶ *Unisys*
(215) 986-4011

Softronics, Inc. has introdnced Softerm GroupWare, rightsizing communications software for the enterprise networks.

Softerm GroupWare offers a variety of homogeneous libraries that enable users to select specific connectivity feature requirements.

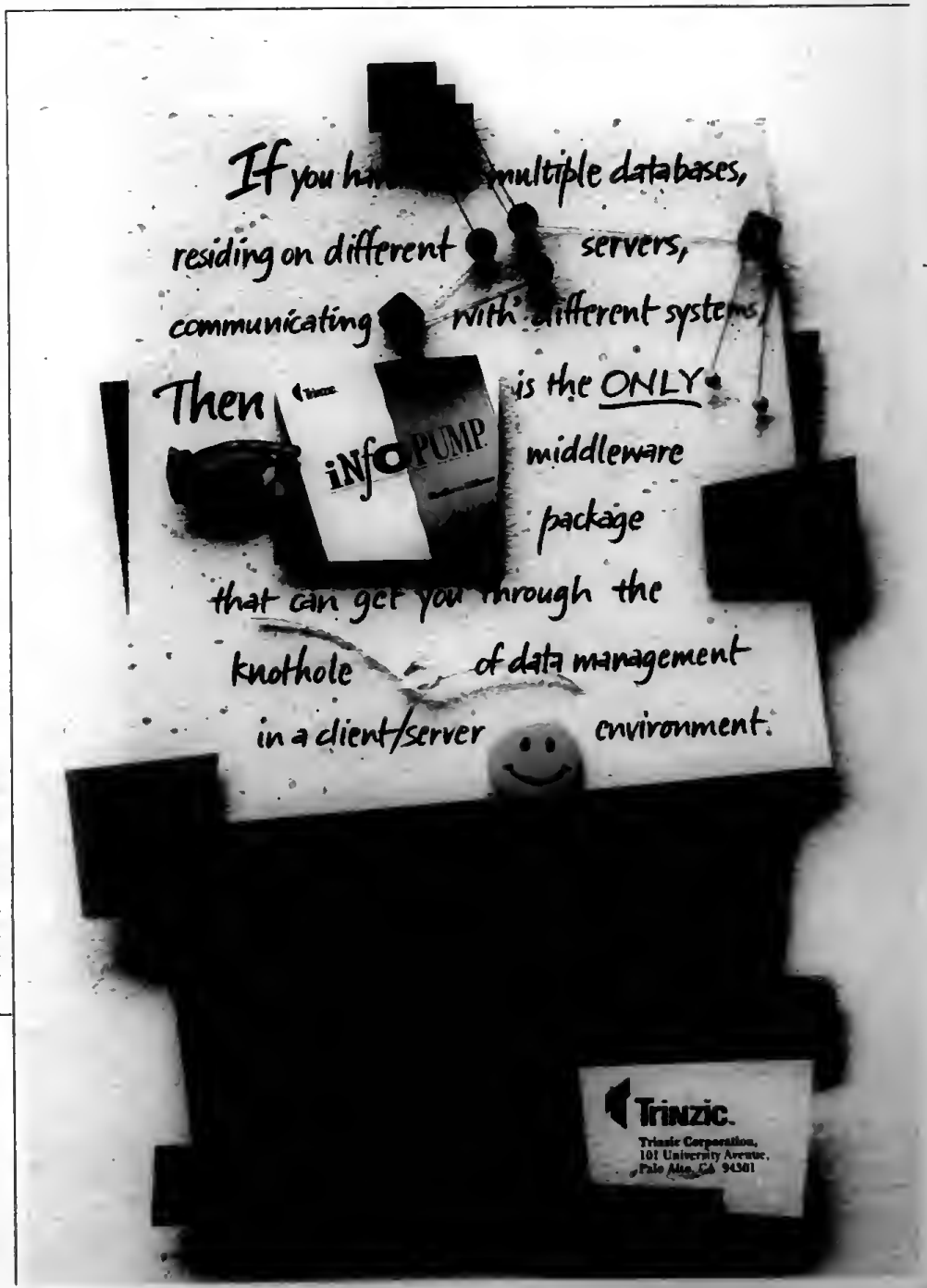
Before shipping the software, the Colorado Springs, Colo., company will customize it; or, users can do so with the Admin programs included. Softerm GroupWare can also be individualized for each workstation. The product is available for Windows and OS/2.

Softerm GroupWare prices range from $2 per workstation for a 1,000-user network to $50 per workstation for a five-user network.

▶ *Softronics*
(719) 593-9540

Product short

E Ware, a division of Visual Cybernetics Corp., has introduced Enote Version 2.0, instantaneous messaging software for Windows 3.1. Enote 2.0 delivers messages to the screen instead of the mailbox. Features include drag-and-drop operations, groupware functionality, context searching, Dynamic Data Exchange support and a spell checker. Cost: starts at $399. E Ware, New York (212) 564-7791.



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Feds dole out airwave slices

By Joanie M. Wexler
WASHINGTON

The recent culmination of the Federal Communications Commission's two-year decision-making process for a plan to divvy up radio spectrum among wireless personal communications services (PCS) providers is reminiscent of Rick Nelson's 1972 Top 10 hit, "Garden Party."

The reason is that the FCC's charter in figuring out how to fairly allocate PCS spectrum — a decision that will impact the multibillion-dollar wireless business (see chart) — was to satisfy a diverse set of needs among a vast array of potential service providers. And as Nelson crooned: "You can't please everyone, so you've got to please yourself."

According to several analysts, this is exactly what the FCC did with its plan to divide 160 MHz of spectrum in the 2-GHz frequency range into islands of myriad regional and local licenses. More licenses mean more revenue for federal coffers, observed Andy Seybold, a consultant and editor of "Andy Seybold's Outlook on Professional Computing" newsletter.

The trade-off could be a slowdown in the progress of ubiquitous service availability, he said.

The agency's plan is to scatter thin slices of auctionable frequency across hundreds of regions. Surprisingly, the FCC made no provision for any nationwide licenses — contrary to several long-distance carriers' consortium-style proposals — that could accelerate nationwide PCS.

The decision not to do that means that come May, when the FCC holds its spectrum auction, hundreds of licenses will be issued, with no federal mandate on what type of transmission technology will be used.

Crisis in the making

For end users that means "a standards crisis," said Amy Stephan, director of PCS at Telocator, an 80-company industry association based here. "Absent from any government of standards, you have the possibility of several different types of technology to be deployed" and the resulting interoperability holdups, she said.

"Ultimately, the consumer will end up paying the cost of that," Stephan added.

Phil Evans, director of telecommunications at Perot Systems Corp. in Dallas and a member of the International Communications Association user group, agreed. "I suspect this will delay the ultimate rollout relative to a plan that would have... allowed a company to offer nationwide service," he said.

The FCC's scheme will necessitate "a lot of wheeling and dealing for companies that win bids in various regions to put together some sort of mosaic that makes sense across the country," Evans said.

On the other hand, this is only a problem "if you believe that the people who receive the licenses are the people who will build the networks," said David Coursey, a consultant and editor of "P. C. Letter" in San Mateo, Calif.

Coursey said he expects the industry to follow the path of cellular and paging networks where people participated in a lottery and then sold their spectrum to someone else. "I'd expect the industry to eventually congeal around a couple of major providers" through such activity, he said.

Evans pointed out, however, that the PCS auction process requires a much heftier financial commitment on the part of bidders than did the cellular and paging lottery procedures, where participants paid a flat entry fee and "won" spectrum. "PCS participants are going to be more serious contenders," Evans predicted.

Creates competition

The FCC plan does serve competition, making room for new and existing players to get into the PCS act. The scheme accommodates seven PCS service providers in each of the nearly 500 trading areas, in addition to the two cellular, two paging and one specialized mobile radio providers already allowed in those areas today.

Stephan questioned whether there would be room for healthy competition for so many players in such a young market. But Louis J. Rutigliano, vice chairman of Ameritech, the Chicago-based regional Bell holding company, called it a positive sign that the FCC will allow existing regional telephone companies to offer new wireless services in areas where they currently provide cellular offerings.

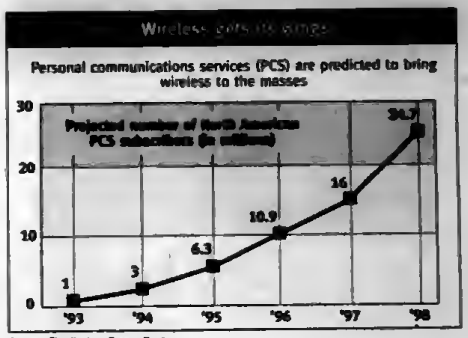
"However, limiting the amount of spectrum we can use may limit the types of service we can offer," he said.

He was referring to the FCC provision that allows current cellular providers to bid for just 10 MHz of spectrum in their own markets. The skinny bandwidth makes it difficult to support the aggregate traffic of many customers or high-bandwidth applications.

Meanwhile, each of the 51 regional trading areas will be allotted two 30-MHz spectrum slices, broken into one 20-MHz and four 10-MHz local licenses.

Hidden costs

The 2-GHz frequency band already has some incumbent microwave users in it. This means PCS auction bidders who wind up with some already occupied spectrum will have to pay the cost of migrating the incumbents into new homes in the 6-GHz band. This factor has some players clamoring for wider slices of frequency to justify these costs.



Source: The Yankee Group, Boston

Open systems

Users grapple with DME delays

By Jean S. Bozman
CAMBRIDGE, MASS.

Delivery of the Open Software Foundation's 2-year-old Distributed Management Environment (DME) technology is running late, with shipments of the first components to systems vendors set to begin by January. However, analysts said users may not get DME-based products until mid-year.

Accordingly, users are adopting strategies to fill the open systems management gap: Some are building a portfolio of separate software tools, some are shopping for existing vendor "frameworks" of tools, and some are simply waiting for standards to emerge.

Originally scheduled to ship in its entirety this year, the OSF's DME will be delivered in "phases," with the first components available by year's end. Even so, a print-service module will not ship until the second quarter of 1994, and the DME object-oriented framework for all DME services is not due to ship until late 1994 or early 1995, the OSF said.

Industry analysts said DME's rollout is not going as smoothly as that of its companion technology, Distributed Computing Environment (DCE) [CW, Sept. 20]. DCE tool kits from IBM, Hewlett-Packard Co., Digital Equipment Corp., Transarc Corp. and others were shipped to users this year.

DME development has been a

DME, *page 60*

Waiting game

Analysts said the DME delay was caused by OSF politics among vendor members that sell competing network management products. Meanwhile, the Common Open Systems Environment's systems management workgroup will start selecting system management parts in 1994 to speed the industry-standards process.

Users still ponder PC-in-hub option

Cabletron latest firm to offer 486 module

By Joanie M. Wexler
ROCHESTER, N.H.

■ Network planners are still divided in their opinions as to whether bundling PC modules into smart wiring hubs for file serving and other functions is a good idea.

Users revisited the trade-offs of this network design option last week when Cabletron Systems, Inc. became the latest vendor to offer a 486-in-a-hub module. Users pondered issues such as management and lower-cost advantages vs. potential drawbacks in the areas of system scalability and creating a possible single point of failure.

"This is a good idea for small workgroup LANs, but you couldn't run your corporation on it," said Graham Morrison, project leader of network design and engineering at Blue Cross/Blue Shield of Connecticut in North Haven, a Cabletron shop.

However, at the low end, Morrison said his organization is planning to

Users, *page 59*

James Daly

Hacking 101

Invitation to disaster.... The next time you look at your private branch exchange (PBX) switch, check out a little device called the Rmat (remote maintenance) port. This feature allows your switch vendor to dial into your PBX switch and remotely perform a variety of maintenance and troubleshooting functions. But it also has introduced a dangerous vulnerability to telecommunications systems. Many people leave the Rmat port on all the time. Major dumb move.

The Rmat port is a great back door for hackers, says John Ceraolo, a systems security manager at VNU Operations in Coral Springs, Fla. Check out Ceraolo's lucid description of Rmat dangers in the latest "Computer Security Alert" newsletter from the San Francisco-based Computer Security Institute. In one chilling episode, the system software even *helped* Ceraolo electronically break into his own shop.

His advice: Turn off all your Rmat ports, informing the vendors that they will have to call ahead to gain access. And change all switch passwords as soon as your equipment is installed.

Ceraolo also recommends that security managers change the password on the switch on a regular basis as well as on the termination or resignation of either vendor technical staff or your own staff. You also might want to think about joining your vendor's user group to stay up on tips and tricks.

Says Ceraolo: "You may be surprised at what kind of vulnerabilities exist in your phone switch."

Straight from the horse's mouth.... A school for hackers? Not exactly. But if you want to get the straight dope about how those electronic banditos break into your system, well, you might as well ask one.

And that's what you'll get a chance to do Nov. 3 and 4 at the School for Hackers, a seminar sponsored by Omicron, a Mountain Lakes, N.J.-based consortium of Fortune 500 companies interested in improving the use of computers in everyday business.

The event will be hosted by veteran hacker Ian Murphy, who cut his teeth entering the computer systems of places like the White House and Pentagon under the nom de net "Captain Zap." The seminar costs $895 and will be held in Somerset, N.J.

Who needs a Rolls Royce?... If I've heard it once, I've heard it a bajillion times: Computer security is too darned expensive. If you're tired of writing big checks for electronic security packages, you may want to check out <LOCK> from Secure Systems Group International, Inc. in Alpharetta, Ga.

<LOCK> retails for $39 and in quantity can be licensed for as little as $1 a node. It offers everything from access control to program authentication to data encryption. It doesn't have a lot of bells and whistles, but it beats paying upward of $200 or more for a similar package. Says co-designer Winn Schwartau: "We're the Volkswagen of the security business."

Nail down that Mac.... Apple Computer equipment is five times more likely to be stolen than PC clones, according to the Stolen Computer Registry, a New York-based clearinghouse for information on stolen computers.

Keep your eyes on the guide.... The *TV Guide*, that is. The folks at NBC's *Night-line* have been chasing down quotable folks in the computer security community these past few weeks while putting together a piece on security and privacy in the electronic community. It should air any day now.

Daly is a *Computerworld* West Coast senior correspondent.

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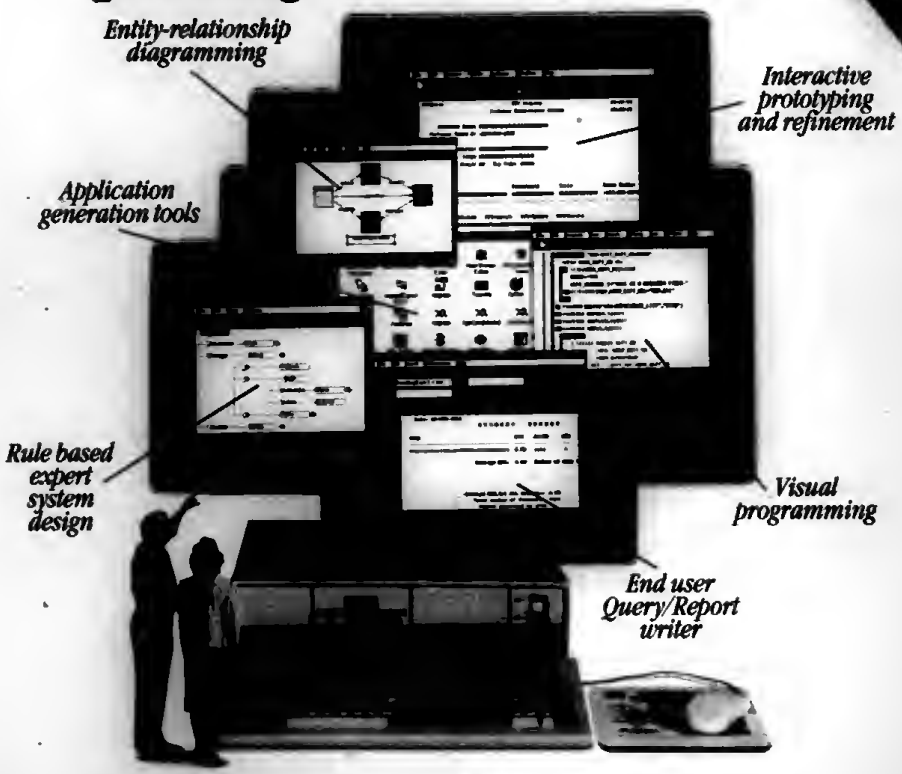

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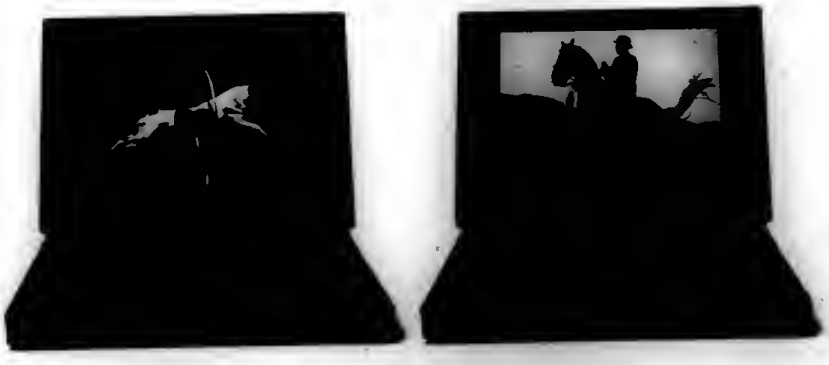

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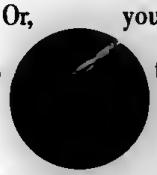

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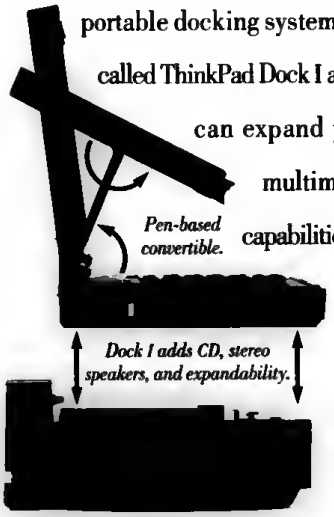

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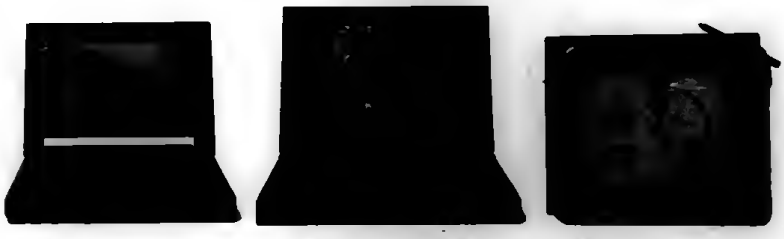

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Briefs

Interoperability tested

A dozen vendors said test results for the Open Shortest Path First protocol revealed complete interoperability in local- and wide-area networks among all participants. Key vendors included **3Com Corp., Ascom Timeplex, Cisco Systems, Inc., Digital Equipment Corp., IBM, Novell, Inc., Proteon, Inc.** and **Wellfleet Communications, Inc.**

Bellcore offers ATM upgrade

Bellcore contributed technical specifications for the carriage of Switched Multimegabit Data Service (SMDS) over Asynchronous Transfer Mode (ATM) networks to an SMDS interest group. SMDS is a public packet-switched, connectionless data service that the telecommunications carriers offer. It is said to be less expensive than dedicated, point-to-point connections. When adopted by vendors, the Bellcore specification should allow customers to use SMDS now and smoothly migrate to ATM when it is more widely accepted.

Cisco training program debuts

Cisco has begun a program to identify individual customers and partners who are network experts and further train them in diagnosing and troubleshooting internetworking problems. The certification course will be limited to high-level engineers and systems analysts. When they complete the course, those people will have direct access to high-level support at Cisco.

Mobil and First Data go X.25

Mobil Oil Credit Corp. and **First Data Resources** will be the first customers to use **MCI Communications Corp.**'s ResponseNet service for transaction-processing applications. The service uses X.25 packet technology, a protocol that efficiently uses network bandwidth to support the bursty and high-volume data patterns of transaction processing.

EC automates taxes

Infonet Services Corp. said European Community member states are exchanging value-added tax information via the company's Virtual Private Data Network Service. Before completely automating the tax collection process in July, 60 million paper import documents were filed each year, Infonet said.

Florida utility picks its network

Florida Power Corp., the second-largest electric utility in the state, has awarded **Network Equipment Technologies, Inc.** a $1 million contract to install a broadband network to connect router and the utility's Synchronous Optical Network rings.

Bell to offer frame relay

Bell Atlantic Corp. said it plans to make its frame-relay, high-speed data service available in most metropolitan areas in the mid-Atlantic region by early fall.

On-line services offer products

The burgeoning on-line services industry has been busy with four services announcing products. **Prodigy Services Co.** in White Plains, N.Y., now has a bulletin board that allows subscribers to ask technical questions of hardware and software manufacturers. **Timeworks, Inc.** and **Gateway 2000, Inc.**, among others, will participate. **World Travel On-line** in New York launched a multimedia travel service that allows subscribers to dial in and access video clips of hundreds of destinations. **America Online, Inc.** in Vienna, Va., said it will offer a graphical user interface for people wanting to use the Internet. **CompuServe, Inc.** in Columbus, Ohio, said it will support Version 2.0 of Novell's Remote MHS.

Scanning scam in New York

Six men were arrested for allegedly scanning New York City airwaves for legitimate cellular phone numbers that they then programmed into unauthorized phones, resulting in millions of dollars of fraud. The Bronx District Attorney announced that investigators had seized $24,000 in cash, 60 cellular phones and computer equipment when they raided apartments used by the suspects to obtain the numbers and program the illegal phones.

Financial networks to merge

The New York Switch Corp., owner of the NYCE network, and NENI Corp., owner of the Yankee 24 network, have signed a letter of intent to merge the two electronic funds transfer (EFT) firms into a super-regional Northeast EFT company that will handle a combined 1.2 billion transactions per year in 24 states.

Xircom introduces modems

CALABASAS, CALIF.

Xircom, Inc. recently introduced a pair of modems designed to provide local and remote LAN connectivity and fax/modem communications for PC users in what the company called a two-in-one package aimed at mobile professionals.

The Xircom CreditCard Ethernet+Modem and Xircom Pocket Ethernet+Modem cost $699, which Xircom claimed is 15% to 25% less expensive than a separate LAN adapter and modem.

The company, based here, said users can fax a document or dial in to a bulletin board service while remaining logged on to a LAN using popular third-party remote LAN applications.

The CreditCard Ethernet+Modem offers Ethernet support in a PCMCIA Release 2.0-compatible card slot.

The pocket modem is available now; the PCMCIA version is scheduled for this fall.

Users ponder PC-in-hub

CONTINUED FROM PAGE 55

use the $6,995 PC module as "another option in our network tool kit." Specifically, he said, the health insurer will use it with an interface for running temporary wireless networks and to house Novell, Inc. SAA Gateway NetWare Loadable Modules, which encapsulate LAN protocols and feed them to IBM host environments.

More security

Blue Cross also intends to use Cabletron's module, called the PCMIM, as a more secure file server. "Remote file servers probably are not on their own [uninterruptible power supply] and are vulnerable to someone walking up and rebooting them," he said.

Filling out the roster

Other players in the PC-in-a-hub market include SynOptics Communications, Inc., Networth and Optical Data Systems, Inc. Prices for the modules range from about $5,000 to $8,000.

Analysts and Cabletron product manager William J. Clark describe PCMIM as the most robust PC-in-a-hub option to date. The module for Cabletron Multi Media Access Centers (MMAC) comprises an 66-MHz Intel Corp. I486DX module.

The PCMIM offers two Extended Industry Standard Architecture (EISA) slots that use one MMAC slot, and it doubles the base and expansion memory of the module from its main competitor, Networth, Inc.

Clark described the PC as a generic, standards-based PC platform that allows users to swap in functions, such as LAN file servers and network interfaces including Asynchronous Transfer Mode and wireless, that are built by third-party vendors for the EISA bus.

Customizable modules

Users, then, could buy a "blank" module and customize it to whatever function they wanted in the hub, rather than wait for Cabletron to develop a module they might require, Clark said. Cabletron will eventually build EISA-compliant network interfaces itself, but the company declined to speculate on what those will be, be noted.

Victor Duchovni, senior systems analyst at Cabletron shop Lehman Brothers in New York — admittedly a Unix bigot — described the concept as opting for a "crippled PC. You save on some physical things like [shared] power supplies and cabling, and the cost is slightly cheaper. But I'd like my servers to stand alone and be more expandable."

On the other hand, Louie Valles, manager of small systems and networks at the University of Texas at El Paso, a PCMIM beta site, said he is excited to bundle his Novell NetWare servers into his MMACs. He cited a performance advantage in the move.

Immediate throughput

"The PCMIM is literally on the backplane of the MMAC chassis, so you get immediate throughput," he explained. "You don't have to go out over an Ethernet" and back into the hub for internetworking, he said.

The bottom line is that "it is convenient to put all this stuff in one box," said Michael Howard, president of Infonetics Research, Inc., a consultancy in San Jose, Calif.

For example, using the board as a distributed management module, where the management system listens and sends information to other stations and does not require its own console and keyboard, "is a good use of the product," he said.

However, "the concept hasn't really taken off yet; it's a strange notion for a lot of people who already have their file servers in place and feel comfortable with having their PCs separate," Howard said.

Ethernet adapter card revs up Sun's SPARCstations

By Lynda Radosevich

DALLAS

Interphase Corp. will introduce later this month an Ethernet adapter card said to greatly improve system performance of Sun Microsystems, Inc.'s SPARCstations.

The card off-loads network protocol stack processing from the CPU of the workstation, according to Greg Iverson, vice president of marketing. The effect is to increase processing speed and system performance of the workstation, which typically is used as a network server, he added.

The Interphase development follows similar coprocessing advancements recently made in Asynchronous Transfer Mode adapters from the likes of Fore Systems, Inc. in Pittsburgh.

The Interphase card will support Sun's Network File System operations, and Interphase will add TCP/IP to the stack so that the card can absorb more network traffic without saturating the CPU.

Separately, Interphase announced that Hewlett-Packard Co. has chosen it to provide Fiber Distributed Data Interface adapters for the HP Apollo 9000 Series 700 workstations.

This is the first product Interphase developed specifically for HP workstations; other products are planned, Iverson said.

"I READ IT FOR THE ARTICLES."

"IT CAN BUILD ANY MISSION-CRITICAL, CLIENT/SERVER APPLICATION."

DME delays

CONTINUED FROM PAGE 55

start-and-stop affair, as industry requirements for the Object Management Group's (OMG) Common Object Request Broker Architecture (Corba) and "hooks" into existing network management products emerged, the OSF said.

"Perhaps we weren't as aggressive and fast as we should have been," conceded Roger S. Gourd, vice president and chief of staff at the OSF, who is directing the development efforts. "But every time we looked around, the industry had changed. We are regrouping with the major [open systems] players and the COSE committee to see what modifications should be made in the code."

The OSF's decision to create a comprehensive architecture for DME may have been too big for quick completion, and DME may lose a window of opportunity, industry analysts said. "I think DME will have little or no impact when it's delivered in 1995," said Paul McGuckin, a Unix analyst at Gartner Group, Inc. in Santa Clara, Calif.

OSF designers said they are reworking the DME framework to comply with the OMG's Corba specification. That requirement meant the OSF had to change plans to standardize on Tivoli Systems, Inc.'s object-oriented framework, which was originally based on non-Corba object specifications. HP and IBM also contributed pieces of their framework technology to DME, analysts said.

In DME's absence, users must select from the existing vendor frameworks for systems management, including IBM's NetView 6000, HP's OpenView, Tivoli Systems' Tivoli Management Environment and Sun Microsystems, Inc.'s Sunnet Manager.

DME component timetable

By Jan. 1, 1994:
- License Management Service.
- PC Services.
- Software Distribution Service.
- Event Services.
- Subsystem Management Service.

Second quarter, 1994:
- Printing Service.

By 1995:
- DME Object Framework, which supports all DME services.

Some user sites are monitoring the standards evolution — but are not ready to commit to a framework. The need for centralized management of sprawling networks will force a decision.

"The need is not so great that we are prepared to jump into the water yet," said Felix Fridman, director of information systems at the Alberta Cancer Board in Edmonton, Alberta, Canada, who is monitoring systems management technology.

The Alberta health group's 600-device enterprise network, built on Sun computers, is being monitored for outages but lacks an integrated framework of systems management tools to control remote servers from a central site, Fridman said.

Site solutions

Other sites have assembled a do-it-yourself portfolio of management packages. Purdue University in West Lafayette, Ind., uses license management and software distribution programs obtained from different sources to manage the hundreds of computers that serve 16,000 end users in its engineering schools.

At Dunkin Donuts of America, Inc. in Randolph, Mass., users have tried Sun's Sunnet Manager but do not use it at all locations.

Shopping for frameworks is already under way at many sites, as users evaluate several vendors' products to see which fits best with their existing enterprise network. DME, they said, will be supported by such frameworks after it becomes available to systems vendors.

The Woods Hole Oceanographic Institute in Woods Hole, Mass., has used Digital's Management Control Center framework, which is now part of Digital's Polycenter product.

But Andrew Maffei, data communications supervisor at the institute, said he plans to evaluate other frameworks noting that Digital has decided to resell IBM's NetView 6000.

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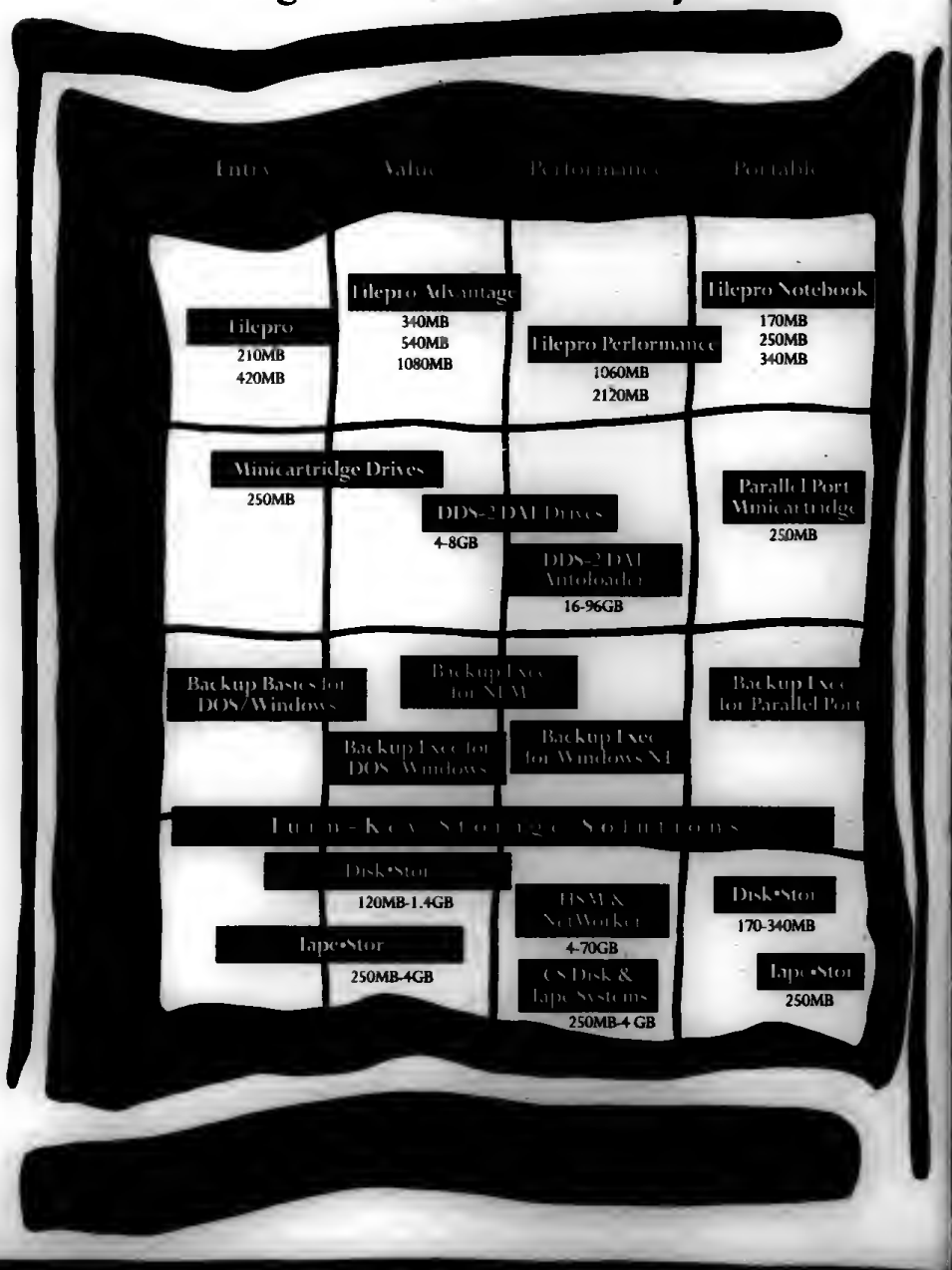

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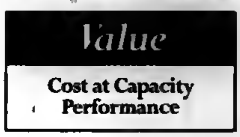

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Entry market priorities:

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- Capacity
- Performance

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Filepro 210 MB and 420 MB

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Tape

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Value market priorities:

- Cost at Capacity
- Performance

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Rotation Speed	4011	4500
Buffer	64K	256K
PC/AT Interface	Yes	Yes
SCSI-2 Interface	Yes	Yes

250 MB Minicartridge Drive

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Tape

DDS-2 DAT 4–8 GB Drive

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Software

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Performance market priorities:

- Performance
- Capacity
- Cost

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Portable market priorities:

- Capacity at Cost
- Performance

Disk

Filepro Notebook 170 MB , 250 MB and 340 MB

The Filepro Notebook Series of 2.5-inch disk drives meet the demanding needs of today's mobile executive. Featuring capacities from 170 MB to 600 MB (with data compression), their patented low power, low-profile, light weight design is perfect for advanced notebooks and other mobile applications.

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Software

Parallel Minicartridge 250 MB Drive

The new Conner Parallel Minicartridge 250 drive is perfectly featured for a wide variety of portable storage applications. Like mobile notebook computing. And for customers looking for a cost effective method to protect valuable data. Our Parallel Minicartridge 250 combines small size, low weight and maximum ease-of-use. Making laptop and desktop system backup easier than ever.

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- includes Backup Exec Software

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When you're on the move, Conner's new Backup Exec for Parallel Port backup software makes protecting valuable notebook PC data as easy as clicking a mouse. It's a full-featured program providing all of the options you want and need from a comprehensive backup program. Its unique combination of robust features and easy graphical interface make it the ideal backup solution for a wide variety of users on the go.

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Storage Systems

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Conner NetWorker offers Novell NetWare users a centralized, enterprise-wide backup and recovery product for complex networks.

- increase performance with concurrent backup of multiple clients in parallel
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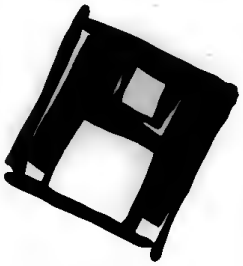

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Asian Headquarters, Singapore, 65 296 1992 ©1993 Conner Peripherals, Inc. All trademarks or registered trademarks are of their respective owners

[redacted]

Peregrine Systems, Inc. has added the Automated Inventory Manager (AIM) module to its Network Automated Problem Applications (NAPA) software.

According to the Carlsbad, Calif., company, NAPA/AIM offers a seamless interface between MVS environments running NetView to the Peregrine Network Management System (PNMS).

NAPA/AIM supplies PNMS with real-time data, providing network administrators with complete inventory configuration data for all NetView-managed SNA devices.

Three other modules monitor network transactions and events, analyze job terminations and automatically open and close trouble tickets based on network alerts.

License fees begin at $11,000 for up to 29 CPUs.

▶ *Peregrine Systems*
(619) 431-2400

Telepartner International has announced Synchrony for the LAN, an Electronic Software Distribution system that automates the entire process of managing software distribution and retrieval on local and distributed LAN workstations.

According to the Farmington, Conn., company, the product delivers enterprisewide automated LAN capabilities, complete reporting and management features, an integrated administration component and Synchrony's client/server architecture.

Entry-level pricing begins at $t,000.

▶ *Telepartner International*
(203) 674-2640

XTree Co. in San Luis Obispo, Calif., has introduced network features for XTreeNet, a Novell, Inc. NetWare-based file manager that allows management of server volumes and disks on local or remote workstations.

Enhancements in Version 3.0 include Oops undelete for NetWare, integrated Zip 2.0 support, multiwindow text editor, file usage mode, file compare and updated file viewers.

XTreeNet 3.0 costs $495. Server extensions are priced at $295 each.

▶ *XTree Co.*
(805) 541-0604

Netlink, Inc. has announced the Frame Relay Access Node (FRAN), a product that improves the performance of SNA transport over frame-relay networks.

Proprietary frame-relay assembler/disassembler products are not required because FRAN uses industry standards such as the Internet Engineering Task Force Requests for Comment 1294 and t490 to transport SNA traffic on the frame-relay network.

According to the Raleigh, N.C., company, FRAN converts the SNA/SDLC data to a native frame-relay interface and passes traffic over the frame-relay network to the bridge/router or the front-end processor to which it is logically connected.

Additional network devices are not needed.

A base Model One unit costs $8,995, and a fully configured expandable Model Four costs $17,500.

▶ *Netlink*
(919) 878-8612

Logicraft, Inc. has unveiled LanCD, CD-ROM networking software that allows network access to multiple CD-ROM drives.

Up to four different network protocols are supported simultaneously — one IPX/SPX and three NetBIOS. This support enables users with multiple networks, including Novell, Inc.'s NetWare and Banyan Systems, Inc.'s Vines, to simultaneously access CD-ROM applications.

Connectivity to Unix and VMS systems is provided when the product is used in conjunction with 486Ware and OmniWare, Logicraft's PC network servers.

A software package called FastCD that performs fast data searches is also included.

According to the Nashua, N.H., company, administrators can change serve parameters, set up and monitor CD-ROM licensing and view server activity from a remote LanCD client.

Pricing starts at $t,995 for a t00-simultaneous-user license.

▶ *Logicraft*
(603) 880-0300

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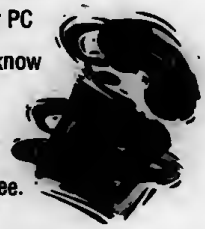

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CPW10413

Digital tries Unix again

By Craig Stedman
MAYNARD, MASS.

Digital Equipment Corp. wants to come in from the commercial Unix cold — again.

Recognizing that users still do not view it as a major commercial Unix vendor despite several recent attempts to forge a new image, Digital is gearing up for another try that will start next week with the introduction of a variety of layered software for its DEC OSF/1 operating system.

While this batch of software will not support key technologies such as symmetric multiprocessing, clustering and network management until 1994, Digital officials said they hope it will give DEC OSF/1 some initial commercial appeal when the system ships later this year (see chart).

Narrow appeal

Right now, DEC OSF/1's commercial capabilities "are rather limited" beyond support for some of the major relational databases and application development tools, acknowledged Mark Silverberg, Digital's commercial Unix marketing manager. As a result, he said, sales of Alpha AXP systems running DEC OSF/1 have been restricted mostly to technical users.

Changing that pattern will require more than just adding new products to the mix, however. "Digital's sales force built a reputation of being unwilling to talk seriously about Unix," said Wes Melling, an analyst at Gartner Group, Inc. in Stamford, Conn. "As long as that continues, they have a fundamental problem."

DEC OSF/1 "is a perfectly fine operating system, but there's an absolute ne-

Digital, *page 69*

Commercial zone

DIGITAL PLANS TO SHIP THE FOLLOWING LAYERED SOFTWARE PACKAGES FOR DEC OSF/1 BY YEAR'S END

[illegible]
Fail-over software that shifts processing to alternate computer in the event of a system crash. Requires dual-ported disk drives.

[illegible]
Distributed systems management tool for managing accounting control, security and other features across multivendor installations.

[illegible]
Backup software for use in restoring data in case of major system or network failure.

[illegible]
Combination of software and an optical jukebox for storing infrequently used data on optical disc drives.

[illegible]
File system with built-in utilities.

[illegible]
System analysis tool for monitoring performance and work load across a network.

Source: Digital Equipment Corp.

Pyramid aims Nile's power at data centers

By Mark Halper
SAN JOSE, CALIF.

Pyramid Technology Corp. is scheduled to power up its charge toward corporate data centers today when it unveils a top-of-the-line system that quadruples the performance maximum of earlier Pyramid products.

The company will tout its new Nile Series NS 150 for quantum advancements not only in throughput but also for what it called fault resilience, although users said they were more impressed with the line's raw power.

On the Nile
- 150-MHz R4400 processor
- Scales up to 16 processors
- 260-2,080 MIPS
- SPECint92 rating: 92
- 1T-byte storage capacity; 4G-byte memory capacity
- Pricing starts at $450,000

Pyramid said failures in individual Nile componeuts, such as memory or bus controllers, will not cause the system to halt as such failures do on other computers.

The fault resilience pitch made little impression on one potential customer who is considering upgrading from the Pyramid MIServer ES line.

"I don't recall them talking about reliability," said Clifford Holtz, vice president of technical support at Anasazi, Inc., a Phoenix provider of computerized reservation services and software that is reviewing the product.

Nonetheless, Holtz noted, "there's a strong possibility that [Nile] is in our future." He said Anasazi will probably undertake a system expansion in 1994.

Pyramid claimed Nile CPU performance levels range from 260 MIPS to 2,080 MIPS, depending on processor configuration, compared with a 32- to 768-MIPS range on the ES server line that Pyramid introduced a year ago [CW, Oct. 19, 1992]. The Nile also carries a SPECint92 rating of 92; the ES line scores 26.

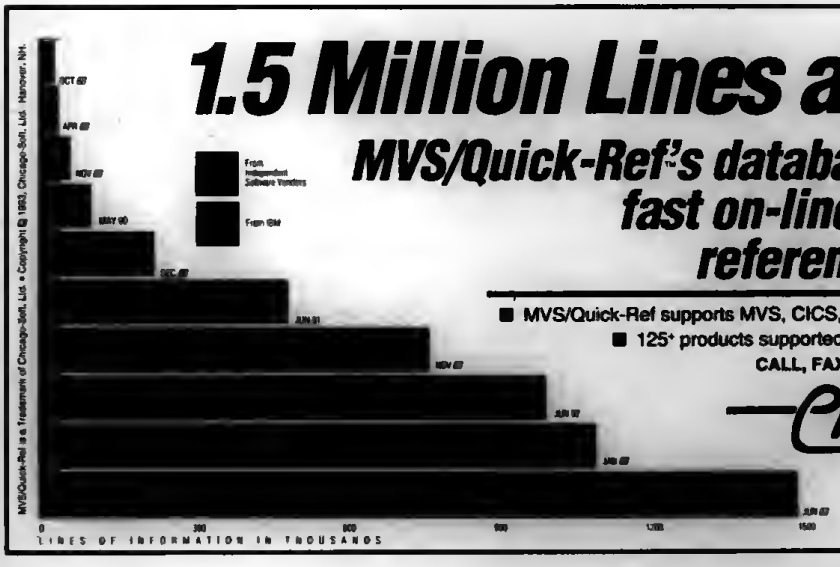
The company priced the series starting at $450,000 for a box with 256M bytes of main memory, 10G bytes of storage and 256 users. Pyramid said it plans a 40% price cut for the ES series, which currently costs from $120,000 to $2.2 million.

20 systems out there

Pyramid President John Chen said the company has shipped about 10 units to end users, including Churchill Insurance in the UK. The company has also delivered about 10 systems to business partners, including Electronic Data Systems Corp., Information Builders, Inc. and Oracle Corp., Chen said.

One Pyramid user, G. Heileman Brewing Co. in La-Crosse, Wis., will probably wait for a massively parallel system before upgrading, especially because it only recently moved to an ES model. Pyramid said it has a massively parallel machine under development but declined to elaborate on when it plans to make such a

Pyramid, *page 68*



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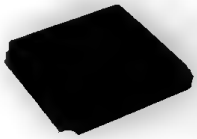

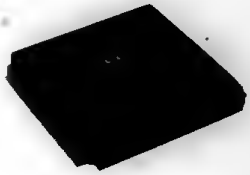

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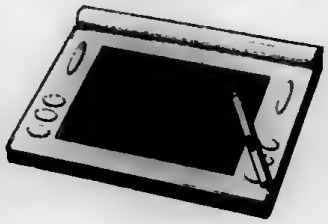

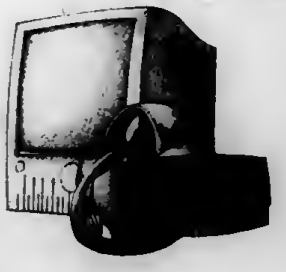

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Pyramid

CONTINUED FROM PAGE 65

product available.

"If we make a quantum leap in processing power, we'll probably go with massively parallel since we're a heavy Oracle user, and Oracle seems very complementary with that type of architecture," said Paul Ricker, Heileman vice president of information systems.

Pyramid President John Chen: *'Unix does have a solution'*

"Massively parallel really does bring you significant processing power," he added. "I suspect we'll go with it, unless, of course, someone comes out with something totally new and less expensive."

Heileman expects to be ready for a system upgrade in about a year, once its ES box hits 60% of capacity, Ricker noted.

Chen said Pyramid will release benchmark ratings from the Transaction Processing Performance Council (TPC) later this year. He said the company has not yet completed the TPC testing process because it has focused instead on partner endeavors, such as the Oracle database initiative.

The Nile series incorporates the 150-MHz R4400 microprocessor; the ES line uses the 32-MHz R3000. Nile scales up to 16 processors through eight boards with two processors each; ES scales to 24 using 12 boards.

Nile houses 12 slots for processor boards, memory cards and for I/O cards supporting up to 18 controllers each.

I/O enhancements contribute to the throughput leap. Pyramid said it doubled the width of its backplane bus to 128 bits, while ramping up bus speed to 25 MHz generating 400M byte/sec. performance. The 64-bit backplane on the older ES series runs at 10 MHz and 80M byte/sec.

It also doubled the number of I/O devices supported, from 36 to 72, but otherwise, I/O bus specifications remain the same, at 32 bits wide and 40M byte/sec.

Storage capacity is 1T byte on the Nile series, compared with 250G bytes on the ES. The system accommodates up to 4G bytes of main memory through four 1G-byte memory boards.

Judson Groshong, director of product marketing at Pyramid, said the Nile series is binary-compatible with the ES series. The company changed some source code on its Unix based DC/OSX operating system in order to take advantage of the R4400. With the changes, Pyramid modified the system's libraries and test and set instructions, Groshong said.

More tools

Pyramid said it is working with database vendors Oracle and Informix Software, Inc. to add database management and system administration features to the Nile series. Such additions could assuage potential data center customers concerned over the dearth of Unix management tools.

"If you compare the Unix world with the proprietary, the proprietary world has a stronger set of features to help data center managers manage their data center," noted Pyramid President John Chen. "Unix does have a solution but needs to be more user-friendly, more robust and reliable."

To that end, Chen said that first Oracle and then Informix will build functions such as backup and restore, network disk management and warm and cold starts into the most recent releases of their databases for the Nile series. Chen said he expects Oracle to complete its development effort before the end of the year.

"We are driven by a mutual customer to get Oracle running first," Chen said. He declined to identify the customer, but it is believed to be the Metropolitan Water District in Los Angeles. — *Mark Hall-Jayar*

CHOOSING THE WORLD'S BIGGEST DATABASE COMPANY MAY SEEM SAFE.

Digital

CONTINUED FROM PAGE 65

cessity that Digital swing people's perceptions 180 degrees," added Chris Christiansen, an analyst at International Data Corp. (IDC) in Framingham, Mass.

Digital did not even rank among the Top 10 vendors of commercial Unix systems priced from $10,000 to $1 million during 1992, according to IDC.

Silverberg agreed that Digital's Unix image is still less than sterling. The sales force has been giving Unix "a lot of resistance because of the perception that we haven't had good products to sell, especially when you match them with what we have on the OpenVMS platform," he said.

Digital hopes the new products and a stepped-up commercial Unix marketing campaign, said by sources to have a budget in the $40 million range, will help on the image front. The company is also putting all sales personnel through a new training program emphasizing DEC OSF/1, Silverberg said.

User reaction to Digital's efforts was mixed. "It's deja vu all over again," said Bob Cloninger, data processing manager at OK Industries, Inc., a poultry processor in Fort Smith, Ark. "I've heard that song and dance from them before. Do they mean it this time?"

Cloninger, who uses VAX 4000 systems with OpenVMS, said he will likely run DEC OSF/1-equipped Alpha AXP hardware on a trial basis. He added, though, that he "would be real reluctant right now to invest heavily in DEC OSF/1."

On the other hand, McCaw Cellular Communications, Inc. in Kirkland, Wash., is a satisfied user of Ultrix, Digital's earlier derivative of Unix, for a customer service application. "We kind of decided that their reputation was maybe not fully deserved," said Wayne Yerigan, McCaw's chief technical architect.

However, Yerigan noted that McCaw remains "a bit wary of DEC OSF/1" because of its lack of a production system track record. The company is testing DEC OSF/1 for possible use on Alpha hardware starting in January, but it is also evaluating Unix systems from Hewlett-Packard Co. and IBM, he added.

One issue is the availability of the third-party, system-level software McCaw uses. Several vendors are holding off on DEC OSF/1 ports until more demand develops for the operating system, Yerigan said.

Tools key

George Kerns, assistant vice president for cellular information management operations at GTE Telecommunications Products and Services in Atlanta, said he also is "open-minded" about using DEC OSF/1 for a client/server point-of-sale project now in the planning stage. However, Kerns noted that the choice would be driven mainly by application development tools, not the system itself.

Digital claims to have about 1,500 applications available for DEC OSF/1 now, and Silverberg said virtually all of the key ones should be in place by year's end.

Judith Hurwitz, president of the Hurwitz Consulting Group, Inc. in Watertown, Mass., said she is "more encouraged than I have been for a while" about the prospects for DEC OSF/1. "They are doing a lot of things right when it comes to Unix technology," she said. "They blew their credibility so many times that people aren't willing to believe in them until they have the technology available."

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Briefs

Sequent corners NASDAQ

The National Association of Securities Dealers (NASD) has signed Sequent Computer Systems, Inc. to a five-year agreement to provide NASD with Unix-based client/server systems and professional services for its corporate operations. In the first year of the contract, valued at $4 million, Sequent will install two clustered, Unix-based Symmetry 2000/700 multiprocessing systems designed to support more than [illegible] users. The new NASD [illegible] systems [illegible] users, affiliates and [illegible] also of the NASDAQ stock market.

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- Survey the key elements of Abstract Syntax Notation One (ASN.1), the language used to define SNMP message formats.
- Understand how TCP/IP and the related Internet protocols such as UDP and IP support SNMP.
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Funeral home chain buries mainframe

By Ellis Booker

Rest in Peace, ES/9000. Rest in Peace, homegrown software.

The world's largest operator of funeral homes and cemeteries, Service Corp. International, will retire its IBM ES/9000 mainframe early next year and complete a migration to a top-of-the-line IBM AS/400 loaded with a commercial integrated business system.

The downsizing project began last March when the company's cemetery business relocated from San Diego to the corporate office in Houston, according to Vincent Ambriola, managing director of information technology and head of the company's 120-person information systems staff.

Ambriola, who joined Service Corp. in early 1990 from a national jewelry retailer, acknowledged that dropping by the firm's retail outlets is different from walking into a jewelry store. But, he said, "Actually, from a [data processing] point of view, we have the same problems to solve: how to use technology and information better and to see how the business operates."

As befits its somber industry, Service Corp.'s operation is simple. "We don't have major inventory, merchandising or credit requirements... things you might associate with a retail business," Ambriola explained.

Vincent Ambriola *was sold on the midrange*

Why then the need for a powerful host?

The reason was transaction volume. Service Corp. processes all its transactions on a daily basis and again at the end of the month. The month-end volume of 1.5 million transactions justified the ES/9000, according to Ambriola.

On the other hand, Ambriola was sold on the merits of the midrange platform, specifically its lower maintenance and software costs.

At last, the AS/400 line matured to the point where a cutover was deemed appropriate. Service Corp. is currently porting all its business to an AS/400 F90, a three-processor machine loaded with the maximum — 80G bytes of mirrored disk space.

At the same time, the company revamped its software strategy, electing earlier this year to buy an integrated business package from Lawson Software in Minneapolis.

"Replacing all the software, upgrading the San Diego AS/400 and installing a second AS/400 for development will consume $6.5 million," Ambriola figured. He said he expects a 28-month payback with an annualized savings of $2.8 million.

The mainframe migration in the home office was just one IS project at Service Corp. It took another two-and-a-half years to bring the field "offices" into the computer age.

"We decided to put MS-DOS computers in all the funeral homes and cemeteries," Ambriola said.

In the past, these 850 users had to fill out precise paperwork by hand, including state and federal forms, hospital forms, personal history and, of course, death certificates.

"We anticipated a lot of problems in training, but the PC displaced something they hated worse, which was filling out forms," Ambriola said.

The system was given the code-name Falcon; for Family Assistance Local Computer Operations Network, and currently generates all the forms and determines the prices for services and merchandise.

Point-of-sale

Apart from the unique setting, Falcon is a classic point-of-sale application: The Houston host polls the field-office computers nightly, downloading price updates while fetching sales data from each location.

Recently, using Information Builders, Inc. Focus 4GL, Ambriola's team enhanced the field systems to handle payroll, time and attendance and financial transactions.

Now Ambriola is looking to eliminate paper with imaging technology. In June, Service Corp. displaced its home-office microfiche operation with an IBM imaging product called RDARS and is considering converting its extensive law library to an on-line image database.

In what could be the most visible change for visitors to Service Corp. locations, Ambriola has been working with IBM to devise for funeral homes a multimedia kiosk that would let bereaved families preview different kinds of services and prices.

Reporter's Notebook

A certain buzz has grown customary at the semiannual conferences held by the International Association of Hewlett-Packard Computer Users (Interex), and the conclave held in San Francisco two weeks ago was no exception.

It is hardly news anymore that users are mad as hops that HP operates what has been called an archaic order-fulfillment system that makes doing business with it an onerous task. But it is revealing to learn what HP is doing about the problem.

Within HP's massive order fulfillment undertaking is a corporate statement-by-action that indicates which of the firm's two database programs HP actually thinks more highly of, Allbase/SQL or Image/SQL.

It is hard to pin down an HP executive on this question. Interrogatories on the subject customarily evoke wishy-washy answers lauding Allbase in some instances and Image in others.

But when it comes time for HP to install one or the other to help chairman Lewis Platt achieve one of his "Top 3 goals" — fixing order fulfillment — which database does HP choose?

The winner is Allbase/SQL.

This will be no small database. HP's effort to fix order fulfillment is essentially a corporate downsizing project of a nearly $20 billion business. Key to the project is a migration from an IBM IMS database running under IBM MVS on an IBM 3090 to an HP 3000 Corporate Business System running Allbase/SQL and HP's MPE/IX proprietary operating system with Unix hooks.

The database is one that will house customer information, pricing and contract files.

The MPE/IX system will tie into HP 9000 Unix-based operations that will form the underpinning of an order quotation and configuration system called Conquest [CW, Sept. 27].

Meanwhile, Interex was full of other product news from HP and third parties. HP announced the following:

- As expected, it added a box to the HP 3000 line that tops the performance of all other HP 3000s except for versions in HP's top-of-the-line Corporate Business Systems series [CW, Sept. 13].

The new HP 3000 Series 987/150 supports up to 1,700 simultaneous users, according to the company. The 96-MHz PA-RISC 7100-based system is priced at $138,320 for a version with 64M bytes of memory, a 100-user license, 1G byte of storage and four I/O slots. It costs $164,820 with 12 I/O slots.

- The company said it will release Version 5.0 of MPE/IX in the second quarter of next year.
- HP is easing the software update process for some HP 3000 applications through an "MPE-Express" program that reduces downtime during the update process.
- HP added direct support for Lotus' CC:Mail and Microsoft's Mail clients to its HP 3000.

Third-party announcements included the following:

- Information Builders (IBI) said it is tying its Focus 4GL development software and its Enterprise Data Access (EDA)/SQL access software into Progress Software's Progress relational database management system. IBI also said it is providing EDA/SQL access to Dynamic Information Systems Corp.'s Omnidex Information Management system.
- Speedware Corp. said it will make its Speedware Version 7.02 client/server development environment available for the HP 3000 and IBM RS/6000 during the fourth quarter. Speedware also said it plans a line of financial software called Speedware Financials Release 1.0 that will run initially on the HP 3000 using Allbase. The program will be available by the end of this year, the firm said.
- Sterling Software said it will port its Gentrax:BaseEDS management software to the HP 3000.
- Wang introduced image-enabling software for the HP 3000's MPE/IX operating system.
- Financial software vendor Multiview Corp. said HP designated it as a VAR.

— Mark Halper

IDEAssociates, Inc. has introduced the IDEA Concert communication processor, a product that allows direct Token Ring communication to the IBM AS/400 midrange systems.

IDEA Concert 2.1 combines features needed to join SNA communications and PC LANs.

As a network changes, IDEA Concert can expand to accommodate a low entry point of 16 devices up to a maximum configuration of 84 devices. The IDEA Concert Brouter option enables the processor to support industry-standard IP and IPX routing. IDEA Concert SNA Datastream Management permits SNA protocol traffic to be routed over LAN internetworks, according to the Billerica, Mass., company.

Prices for IDEA Concert communication processors range from $3,820 for 16-device support up to $17,470 for 84-device support.

▶ *IDEAssociates*
(508) 663-6878

Platinum Technology, Inc. has announced the beta release of Log Analyzer, a product designed for analyzing log data sets, bootstrap data sets and image copies.

According to the Oakbrook Terrace, Ill., company, Platinum's Log Analyzer allows database administrators and systems programmers to use information contained in the DB2 log for auditing data changes and monitoring table space recovery information.

The product offers auditing capabilities such as a data manipulation language activity report, an image copy frequency report, a commit frequency report and a rollback activity report.

Other features include the ability to format data changes made to tables that were dropped and recreated and list active and archive log data sets on-line.

Prices range from $16,698 to $111,756.

▶ *Platinum Technology*
(708) 620-5000

Jensen Research Corp. has introduced Side by Side, an IBM interactive System Productivity Facility-based utility designed for comparing source records.

According to the Oakland, N.J., company, Side by Side lets users compare different files containing source code, screen panels and job control language line by line.

The product has an intuitive, productivity-based interface, and users can see the difference between two files displayed graphically, side by side and in context on an ISPF panel.

The utility works on sequential, partitioned, CA-Librarian or CA-Panvalet data sets.

Side by Side has an introductory price of $2,499 for a permanent license. A one-year license costs $999.

▶ *Jensen Research*
(201) 337-4000

TeamQuest Corp. has announced Release 5.1 of the Capacity Management Facility (CMF) Baseline performance analysis software for Cray Research, Inc.'s Cray X-MP, Cray Y-MP and Cray C90 series systems running the Unicos operating system.

According to the Clear Lake, Iowa, company, CMF Baseline is part of a suite of products that provide historic analysis, real-time monitoring and computer performance modeling across heterogeneous computer architectures.

Prices range from $21,000 to $96,000.

▶ *TeamQuest*
(515) 357-2700

Aris Corp. has introduced Aris Dfrag, a space management utility that defragments database tables.

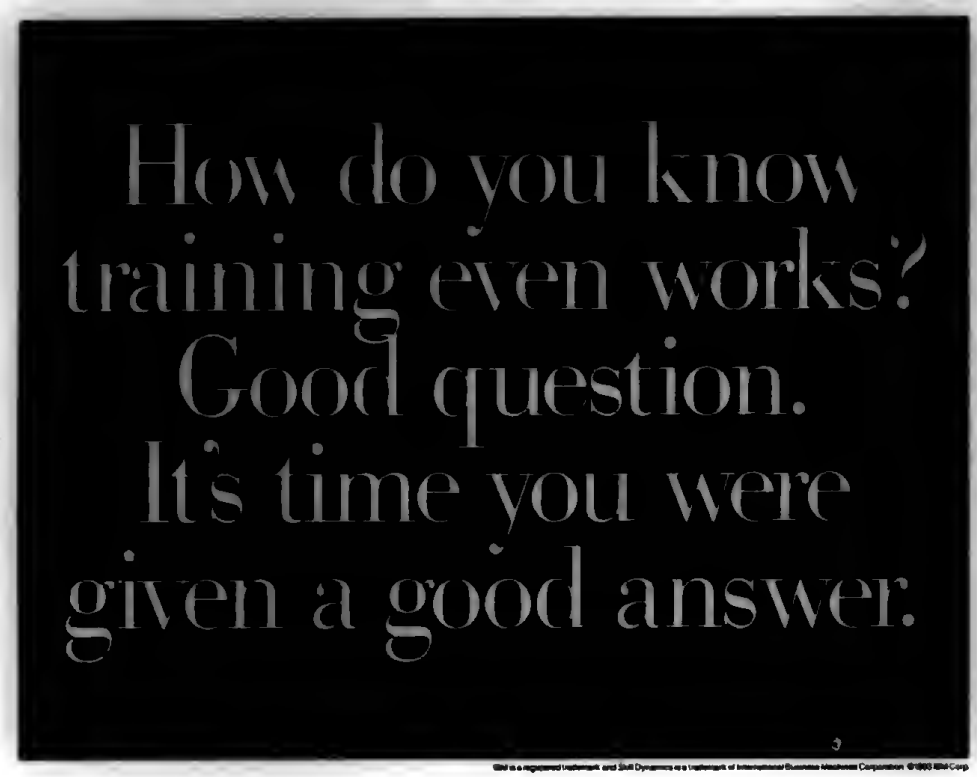
According to the Seattle company, the product assists Oracle Corp.'s Oracle Database Administrator in managing database space more efficiently.

The software can be used on an assortment of platforms with Version 6 and Oracle 7 relational database management system.

User-supplied configuration parameters enable the software to analyze tables for possible fragmentation. The software then recommends more efficient storage parameters for every fragmented table.

Prices for a single license of Dfrag start at $1,295.

▶ *Aris*
(206) 433-2081



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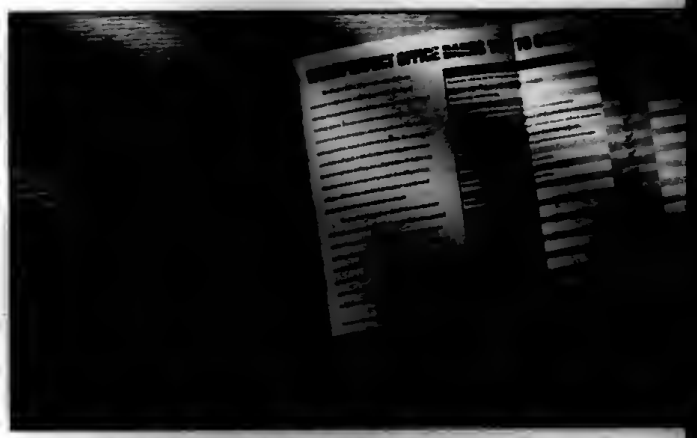

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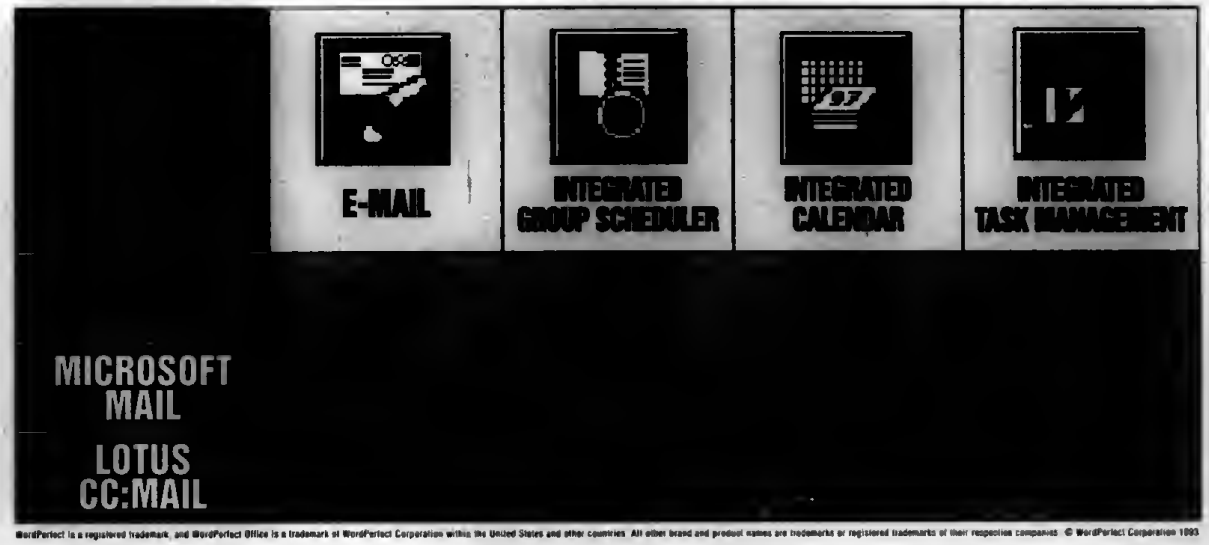

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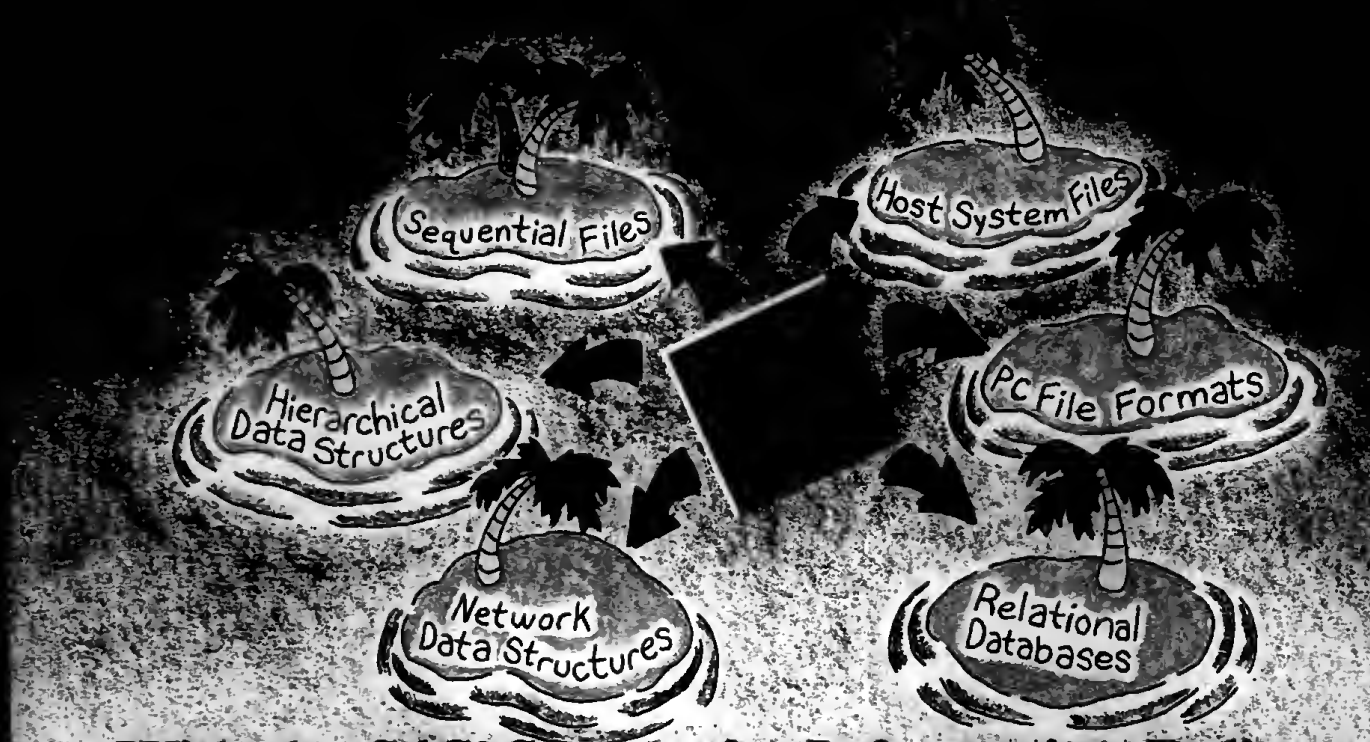
WordPerfect Office



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OMG seeks more user input for Corba spec

Group hopes to strengthen new versions of standard, build customer support

By Melinda-Carol Ballou

Responding both to pressure from its user membership and the need to create a cooperative relationship with the Microsoft Corp. behemoth, the Object Management Group (OMG) will shift the way its object-oriented standard is determined. The goal is to more effectively elicit user input, OMG officials said.

Corporate sites developing distributed applications require standards that are common across vendor offerings, and one key emerging standard is the Common Object Request Broker Architecture (Corba) from the OMG, a consortium of vendors and end users with headquarters in Framingham, Mass.

Backing Corba

While Microsoft has pulled out the stops for Object Linking and Embedding (OLE) 2.0 and Cairo, its strategy for distributed, object-oriented computing, other systems vendors have banded behind the OMG's Corba as a standard for enabling objects to communicate with one another. For instance, Hewlett-Packard Co. [CW, Sept. 27], IBM, Digital Equipment Corp., Sun Microsystems, Inc. and others have released or announced their Corba implementations during the past few months.

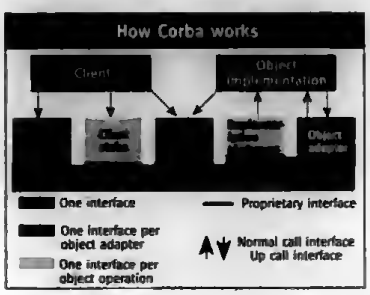
Corba includes a language for describing the interface of an application, called Interface Definition Language, and dynamic and static application programming interfaces (API) for accessing objects across the network. Corba acts as a traffic controller between objects, directing them to allow software on a network to communicate with software elsewhere.

Voting shift

In an effort to better integrate end users into the standards process, the OMG is shifting the way its standard is determined. Until recently, the end-user Special Interest Group (SIG) for the OMG had one vote on the OMG's technical committee. This committee evaluates proposals and then makes its recommendation for a standard to the OMG's board of directors.

The OMG has now established one end-user seat on its board, which votes on the implementation of the standard. The board bases its vote on the recommendation of the technical committee.

In addition, the OMG is expanding end-user involvement so that the entire SIG will evaluate the emerging standard according to purely end-user requirements. This process will probably occur in parallel with the technical committee's work. The end-user SIG's recommendation will be presented to the board and will be given equal consideration with the technical recommendation, OMG officials said. This shift in policy is expected to be finalized in December when the board votes on the proposal.



Users responded enthusiastically to the idea of greater input.

"It would be incredible.... [Full] end-user involvement has been a missing element," said Samir Desai, a member of the technical staff at Bellcore. The OMG standards process has "normally been dominated by vendors. And it's also good for vendors to switch this process. If end users aren't happy, they won't shell out the money, and [vendors] can write all the standards and products they want, but they won't be sold."

Right direction

Nancy Craig, a technical manager at a major financial firm in the Midwest, said her organization sees Corba as a step in the right direction as a standard for distributed computing and looks forward to having input into the standards development process.

"I really want to see it working. Vendors promise a lot, but I want to see how it's implemented," she said. Her organization does not want to be too tightly coupled to Windows environments and is evaluating the Open Software Foundation's Distributed Computing Environment as well as the

OMG, *page 78*

Strategic moves

Novell, Inc. will embed the Corba spec via HyperDesk Corp.'s Distributed Object Management System (DOMS) into a range of Novell operating systems. DOMS is also key to Novell's AppWare strategy.

IBM's Distributed System Object Model currently only runs on OS/2 and AIX, and Sun's Project DOE and HP's ORB Plus only run on Unix operating systems. The Digital and HyperDesk implementations of Corba are set apart from the others by the greater range of operating systems on which they run. These include Windows, Macintosh, Unix and Digital's VMS, among others.

Tools development

Sapiens weds host and client/server

By Melinda-Carol Ballou

Sapiens International Corp. N.V. will combine its host-based tools with client/server tools from SmartStar Corp. to target development across PCs, mainframes, workstations and multiple databases, company officials said.

Known primarily for its PC and host-based rapid application development tools, Sapiens last month began shipping Sapiens Vision for Hewlett-Packard Co.'s HP/UX. Sapiens Vision is an object-oriented tool for rapid development of client/server applications for Unix, Digital Equipment Corp.'s VMS or IBM PCs in a LAN-based environment. Vision was originally developed by SmartStar. Sapiens completed a merger with SmartStar in July.

By the middle of next year, Sapiens officials said they expect to ship an interface between Sapiens' mainframe and PC-based rapid development tools and the Vision products.

How will the interface work? Sapiens Vision applications on the client will request services from Sapiens ES applications on the mainframe by transmitting messages across the network, officials said (see chart). These messages will trigger objects that process data on the mainframe. The results will then be transmitted back to the Vision application on the client. This will enable Vision users to access legacy mainframe data transparently, officials said, and to rapidly develop applications across the enterprise.

Enthusiastic users

Several users were enthusiastic about the potential advantages resulting from the link between the two tools.

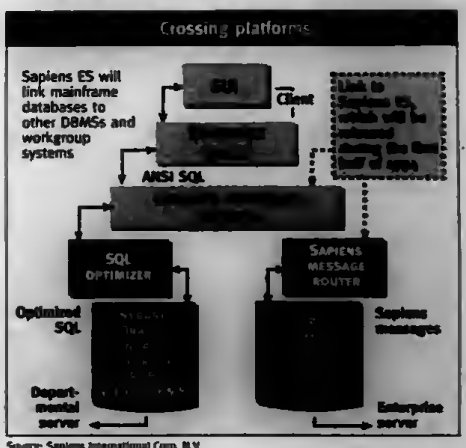
The GE Structured Products Division of General Electric Co. in Mt. Vernon, Ind., currently uses Vision to automate the tracking process for order entry and other records across its manufacturing and business administration departments.

The group uses Digital's Rdb running on a VAX 6600 and an IBM IMS database running on an IBM 3090. Ron Giles, a senior engineer in the group, said he hopes to use the interface between Vision and Sapiens ES tools to program directly to IMS, eliminating the conversion process of downloading and uploading data between Rdb and IMS.

"We would be able to write directly to each database from the client, which makes the application easier to maintain, cleaner and more reliable," Giles said.

The link between the tools will also enable his group to connect its Rdb data to DB2 databases elsewhere at GE and will facilitate a shift to Sybase, Inc.'s SQL Server on the VMS side, he said.

In pricing the requirements for an upcoming project, his group expected cost savings of 30% with Vision. The decrease in programming man-hours is due to the use of business rules rather than procedural programming techniques to develop applications, Giles said.



Source: Sapiens International Corp. N.V.

OMG seeks user input

CONTINUED FROM PAGE 77

OMG's Corba as options.

Currently, the OMG is in the process of establishing standards for low-level services for Corba, such as naming, transactions and persistence services.

Early next year the group will set the standard for interoperability across differing implementations of Corba. Currently, vendors can offer Corba-compliant products that are not interoperable.

Second spec

Dubbed Corba 2, the interoperability spec will change that. Key vendors have committed to supporting Corba 2 as it emerges. IBM, HP and Sun, for instance, are already working on interoperable APIs for Corba across their implementations of the ORB. Products based on Corba 2 specs will not hit the streets until mid-1994 at the earliest, analysts said.

Conspicuously absent from articulating its position on support for Corba was Microsoft. Although Microsoft is a member of the OMG, company officials seem ambivalent about offering relevant technology to the consortium — such as the object interface from OLE — or putting its full weight behind the standard.

Microsoft resumed attending OMG meetings several months ago after a year's hiatus, and sources within Microsoft have said the company may offer portions of OLE for the emerging Corba 2 specification. But Microsoft OMG representative Mark Ryland and others denied that any such decision has been made.

Other industry sources said that Digital will release a bridge between OLE and Corba in January. This could be one likely option for users seeking a link between OLE and Corba [CW, June 21].

Analysts and OMG representatives agreed that customer demand will be the only effective way to pull Microsoft into the Corba fold.

If the OMG's current push to coordinate development of the standard with end-user requirements succeeds, the standards group may have an effective customer lobby for nudging Microsoft into more active support for Corba.

Waiting in the wings

The following Corba implementations are generally available or in early release form:

Digital offers Object Broker, formerly known as ACA Services, and HyperDesk Corp. offers Distributed Object Management System.

IBM offers Distributed System Object Model (DSOM) and System Object Model on OS/2 and will soon offer the products on AIX. Windows clients are under development.

DSOM is used by the Open Doc software architecture from Apple Computer, Inc., IBM, Novell, Inc., WordPerfect Corp. and Borland International, Inc.

Sun offers Project Distributed Object Environment (DOE) in early release form. Both Sun and IBM are targeting Microsoft's future Cairo distributed, object-oriented computing environment with their products. Digital, on the other hand, is focusing on systems integration. HyperDesk is concentrating on LAN-based applications, according to industry analysts.

Hewlett-Packard currently offers Distributed Smalltalk, for which the company just released a new version. HP will also ship ORB Plus as part of an early access program. ORB Plus will be available in January.

Iona Technologies Ltd. launched Orbix earlier this year and will ship its product on Windows NT next week, with Windows support to follow in January.

Other vendors with pending Corba implementations include NCR Corp. and Expersoft Corp.

— Melinda-Carol Ballou

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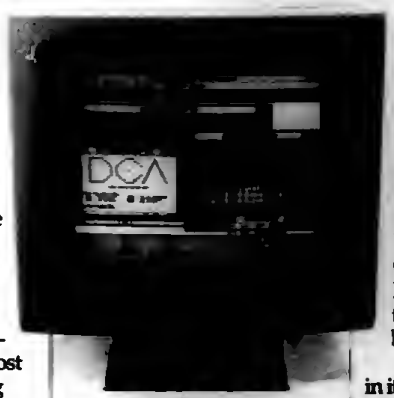

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Software AG rolls out options

By Gary H. Anthes
RESTON, VA

Software AG of North America, Inc. will uncouple its software maintenance pricing from its product license fees and offer multilevel technical support options. This is consistent with the trend in the industry to offer more flexibility and support to users in complex computing environments.

The options greatly expand and codify customer choices, which had been limited to a single no-frills product warranty that promised free technical support for 90 days followed by an optional maintenance agreement for a fixed percentage of the license fee, usually about 15%.

"Customers expected 24 [hour] by seven [day] support, limited access to an electronic service and that was about it," said Michael Davis, director of services marketing and business development.

Now, customers with modest needs may chose a "basic" option that offers support only during normal business hours at a discount off the previous rates. An "extended" option promises coverage around-the-clock, faster response times and a free electronic service package. Though prices will no longer be pegged to license fees, the extended option will average about 15% of the annual fee, said Dennis Privitera, vice president of customer support.

The most demanding users can pick a custom-priced, "mission-critical" option that further shortens promised response time and in essence brings in Software AG as a partner, offering on-site problem-solving, training and consulting.

Davis said the new options are the result of a survey of Software AG customers that showed that budget pressures, new technologies and moves from mainframe to distributed computing have left users feeling more vulnerable and less able to support their total data processing environments.

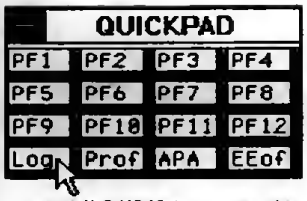
Software AG customer National Gypsum Co. in Charlotte, N.C., has not decided on an option yet but is seeking to strengthen partnerships with strategic vendors as part of a quality management program. "Software AG is definitely one of those vendors," said David Walsh, vice president of information systems.

> "We may be willing to pay more for support ... if it allows us to lower our total operating cost or improve availability."
> — *David Walsh*
> *National Gypsum*

Walsh said National Gypsum has mission-critical applications, such as order processing and billing, on an IBM 3084 mainframe using Software AG products. "We are looking at the role that our proprietary software can play in supporting planned changes in our business," he said. "We are concerned with a lot of things like portability of code to distributed platforms. The business changes may or may not increase our vulnerability, but to the extent they do, we might want to have available different maintenance options."

"We may be willing to pay more for support if in the long run it allows us to lower our total operating cost or improve availability," Walsh said.

The extended and mission-critical options are available now; the basic service option will be available Jan. 1.



A customizable QuickPad floats on your screen, giving you instant access to macros, scripts and frequently used keys with a click of a mouse.

of the desktop and the networked host/server.

The IRMA WorkStation family now supports Novell® NetWare for SAA® and TN3270 over TCP/IP, as well as a variety of other connections. Moreover, IRMA WorkStation products can bring to a mixed-platform environment a uniformity that results in the simplification of support, training, installation and configuration.

Each IRMA WorkStation product gives you a graphical keyboard editor to allow you to easily customize your keyboard. They share powerful file transfer capabilities. They all allow you to run third-party applications that utilize HLLAPI, and offer cross-platform Application Development Tool Kits like DCA's new QuickApp.™

Full support for System 7 features, including Balloon Help and Publish.

QuickApp lets you write a single workstation application that can be used on all your platforms. And it's the first example of DCA's Universal Communications Architecture (UCA), a framework that provides consistent access, features and APIs across host environments, network transports and desktop operating systems.

The graphical programs share features like QuickHit,™ the ability to send commands by simply clicking on a PF key indicator in the host session display, and customizable QuickPads, to automate common [illegible].

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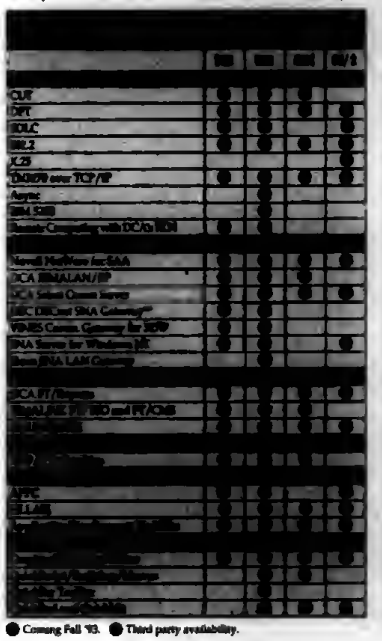

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David B. Ciolkowski

Going with Basic

Requiem aeternam dona eis Domine.

That is the first line of a requiem, a Mass for the dead. I offer it to signify the death of XBase, the generic version of the programming languages descended from Ashton-Tate's original dBase. As an MIS director whose responsibilities include management of application development, I have enacted a moratorium on new development projects in any XBase dialect.

We are a Microsoft shop through and through. Microsoft Office is used by all employees. Access, Visual Basic and Visual C++ are used by the development staff. Programmers are trained in Basic. The only XBase programming happening is maintenance on Fox systems.

In the Microsoft-centric world, Basic is the thread that weaves through all levels of IS. Access Basic is used in the corporate database manager. Visual Basic is used to create robust, stand-alone applications. On the horizon, Visual Basic for Applications will be used as the standard macro language for Microsoft Office. Strategically, XBase does not have a place in this environment.

Two years ago, I would not have dreamed I would be delivering a eulogy for XBase or embracing Basic. I was a supporter of Clipper and spent hours writing Clipper code in my spare time. In my current position as MIS director, it has become increasingly clear that XBase has no future in strategic planning. The following events have galvanized my support for Basic as the standard programming language for IS:

Clipper Version 5.0
Clipper had (and still has) a significant following of consultants who build custom software. Until Version 5.0, it maintained a loose compatibility with XBase. Programmers familiar with XBase dialect could navigate through Clipper to a degree. Then Nantucket decided the object-oriented phenomenon was too important to ignore. It radically changed Clipper's design and added functions.

Borland's purchase of Ashton-Tate
Borland had its own database and programming language, Paradox and PAL, and it wasn't clear how Kahn and Co. would position the flagship XBase product. Borland still has not differentiated dBase for Windows or Paradox for Windows. Nor have they demonstrated any commitment to expanding the use of dBase beyond database applications.

Microsoft's purchase of Fox
"Take that!" said Bill Gates. Microsoft also had plans for its own database and programming language, Access and Access Basic. However, Microsoft's strategy for Basic was significantly more robust than Borland's plans for PAL.

Arago "Quicksilver" bought by Borland
Since purchasing Ashton-Tate, Borland has shown itself to be unconcerned with customers of its newly acquired products by letting Multimate die. The Quicksilver purchase was clearly an attempt by Borland to remove competition. The role of PAL/Paradox vis-a-vis dBase is a concern among Borland customers.

Microsoft's release of Access 1.0
Aside from performance problems on machines with limited resources, Microsoft Access proved to be well-designed. Its programming language, Basic, is an example of Microsoft's commitment to Basic as the language of choice.

By targeting Basic as a database development and comprehensive macro language, Microsoft has ensured that choosing Basic is a good strategic decision. Basic experts will be able to fill many roles within IS. XBase and PAL, good as they are, do not offer the same benefits.

Ciolkowski is director of MIS for Abrams, Benisch Riker, Inc./Colliers International Property Consultants in New York.

Clean up

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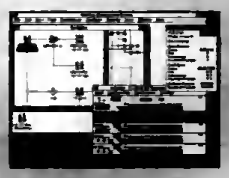

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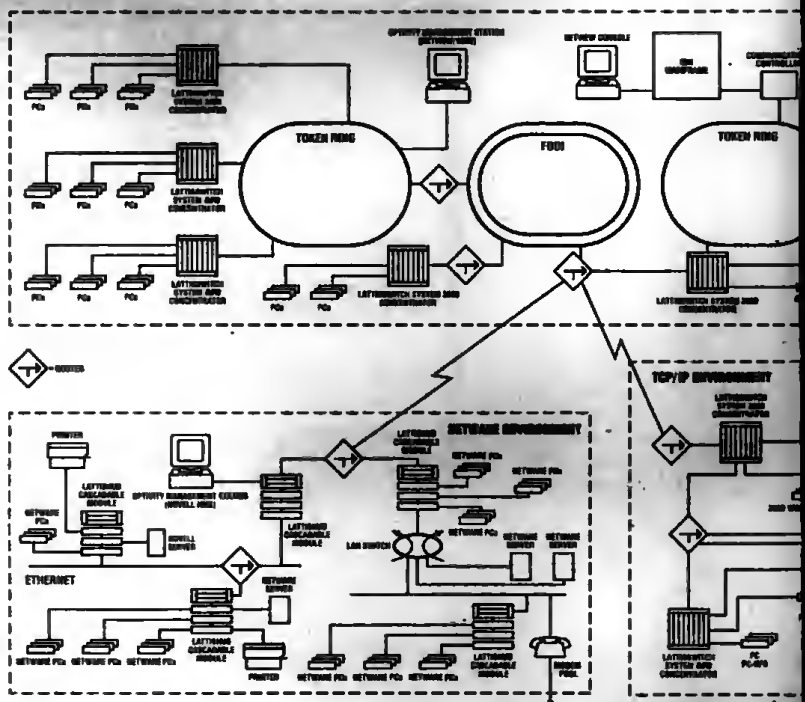

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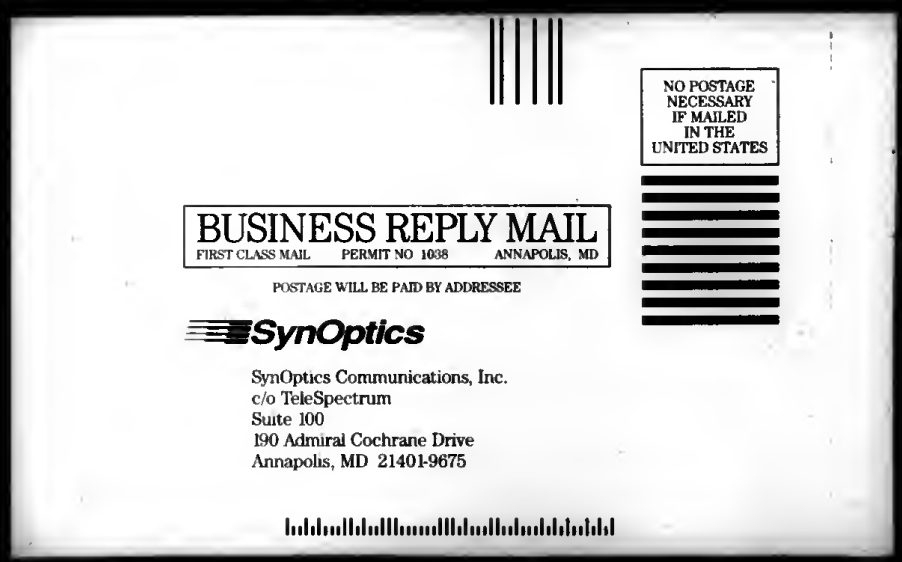

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The Advanced Information Management Software Division of Texas Instruments, Inc. has introduced the Graphical Application Facility (Graf) family of products for use with the Information Engineering Facility for Client/Server.

According to the Plano, Texas-based company, Graf lets users interact graphically with application data through real-time views of current information.

Graf is available for Windows and OS/2 2.1 environments.

A stand-alone Graf Development Toolset costs $5,000.

▶ *Texas Instruments*
(214) 995-6611

MicroStrategy, Inc. has announced Version 2.11 of EISToolkit, a development environment for building applications for cross-platform, client/server executive information systems (EIS) and decision support systems.

A programmer can create a graphical EIS that includes database management, graphs and controls, "what if" capabilities and modeling features for information analysis, according to the Wilmington, Del., company.

The product is based on Informix Corp.'s HyperScript fourth-generation language and includes MicroStrategy's proprietary SQL Language Extensions.

For Windows and Macintosh computers, the Designer version costs $1,995; the 10-pack user version costs $7,995. For Unix, the Designer version is priced at $2,495, and the user version 10-pack costs $9,995.

▶ *MicroStrategy*
(302) 427-8800

Interactive Development Environments has introduced Software through Pictures/Information Modeling (STP/IM) on Sun Microsystems, Inc.'s SPARC, Hewlett-Packard Co.'s HP 9000 Series 700 and IBM's RS/6000 workstations.

According to the San Francisco-based company, the product is the first robust Unix information modeling tool set that provides comprehensive support for client/server development.

Conceptual and logical models can be built, and STP/IM groups can generate SQL for relational database management systems and deploy resulting applications on an assortment of platforms.

STP/IM licenses are available for $15,000 per user.

▶ *Interactive Development Environments*
(415) 543-0900

Must Software International has announced that Nomad 3.4, its fourth-generation language (4GL), is now available for SunSoft, Inc.'s Solaris 2.0.

The product is an integrated set of 4GL information management tools designed for developing scalable applications using client/server technology, according to the Norwalk, Conn., company.

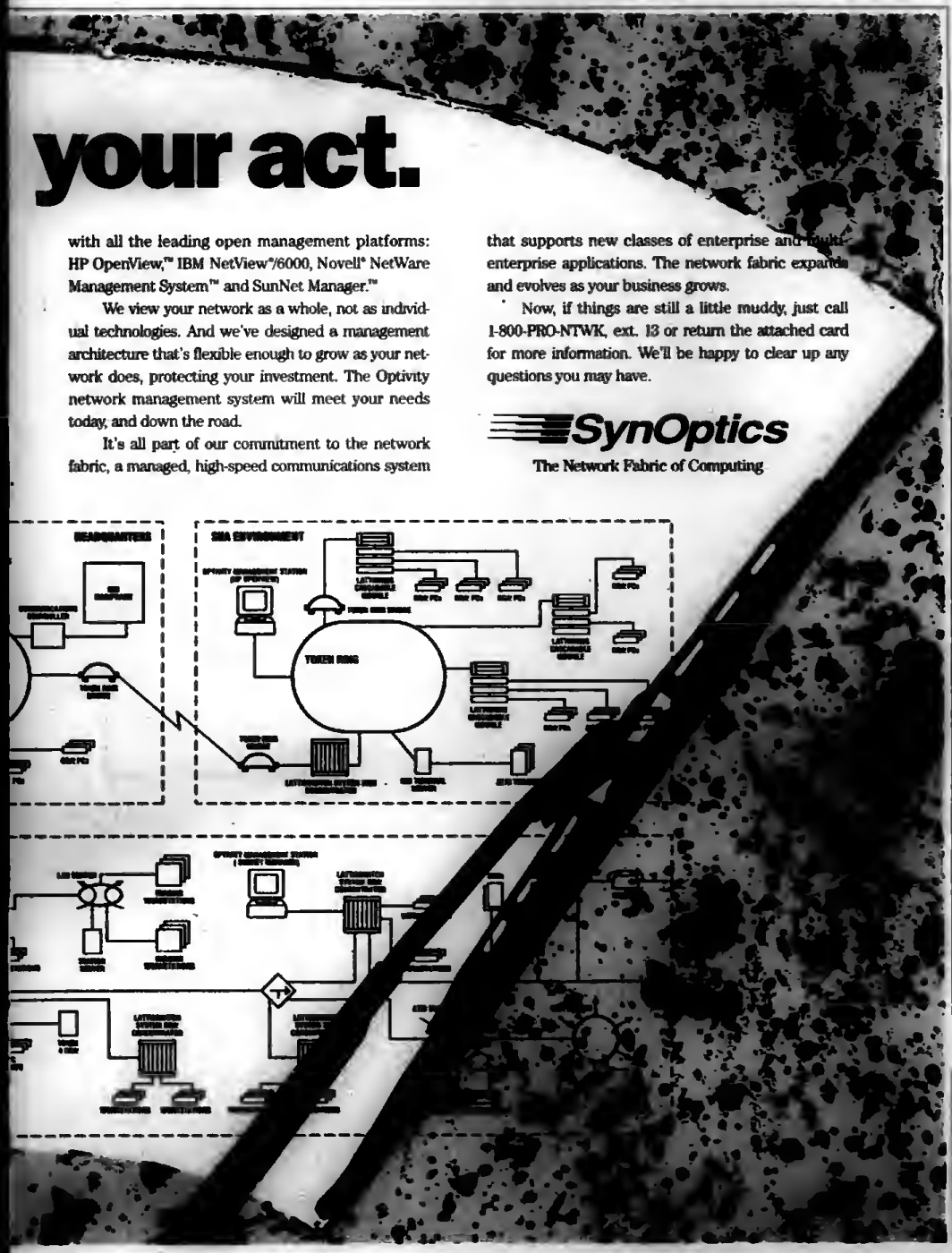
Users will receive reporting and data management facilities, a windowed user interface, procedural language, nonprocedural 4GL, a developer's workbench and a syntax-free reporting front end.

Prices for Nomad 3.4 range from $2,500 for a single-user workstation to $10,500 to $150,000 for multiuser systems.

▶ *Must Software International*
(203) 845-5000

Product Short

LogicCraft Corp. has introduced LogicNet Knowledge Interpreter DLL, a macro language designed for use with CyberNet Object Database DLL. The product offers a level of abstraction that maps data types and operations onto the object database system. It supports the use of string and numerical data types, lists and compound expressions. Cost: $200 per copy. LogicCraft, Edmonton, Alberta (403) 435-4049.



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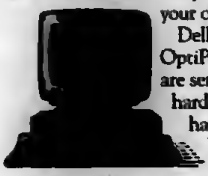

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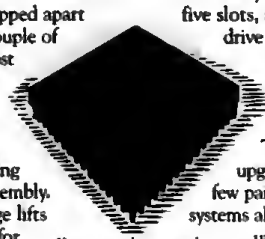

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evasive action

Changing business processes with work-flow systems starts with tracking existing procedures. Unfortunately, many employees would rather cover their tracks.

By Lynda Radosevich

Some employees just don't want you to know how they work. And such workers' penchants can play havoc with business process redesign.

"When you ask questions, they might mislead you. Or they play games, such as being too busy to be interviewed," says Gamile Sakla, an assistant vice president at the First National Bank of Chicago. He's recalling an analysis of customer service employees' work habits conducted prior to the bank's installing a computerized work-flow system.

"Then you cross-examine another person doing the same job, and there's a gap between what they say they are doing and what is happening. The idea is to mislead because they know we're going to change the work flow."

> "The idea is to mislead because they know we're going to change the work flow."
>
> **Gamile Sakla**
> **First National Bank of Chicago**

Horse before the cart

Like First National, any company determined to reap the full benefits of work-flow technologies must accurately analyze how work is accomplished, experts say. Computerized work flow, after all, is the aspect of business process redesign that automates shared work procedures. By documenting those work patterns, the company can spot inefficiencies and reengineer processes before deploying new systems. Like First National, however, many companies find that recalcitrant employees can stymie that analysis.

"Resistance is a big problem" in the initial work-flow analysis stage, says Jim Bear, a senior analyst at New Science Associates, Inc., a consulting firm in Santa Clara, Calif. "It's the same for deploying all new systems, including E-mail, document management and computer-aided design. But work flow has the most extreme impact on working patterns, so it gets the most resistance."

Work patterns are arguably the most personal realm of a corporate culture that resists change, and it's these cultural issues that pose the biggest challenge to managers deploying a work-flow system, says Tom Koulopoulos, president of Delphi Consulting Group, Inc. in Boston.

In Delphi Consulting's 1993 study of 400 companies in Boston, two-thirds of the respondents cited cultural resistance to change and the difficulty of redesigning processes as the major challenges to implementing computerized work flow.

Robert Glass, who publishes *The Software Practitioner* industry journal in State College, Pa., relates the anecdote about a major computer industry company that helped pioneer work flow.

"They held a series of meetings with office staff to define what happens so they could automate it," Glass said. "At the end of the series, one office worker said, 'If our office manager hadn't been present, we would have told you what really happens.'"

What really happens, experts say, is that employees fear that if they tell their managers what they do, the new process will eliminate their jobs.

Often, they are right.

For example, Empire Blue Cross and Blue Shield of New York, which has suffered well-publicized financial difficulties, recently eliminated 240 positions. Company officials confirm that the layoff was linked in part to an image-enabled work-flow system that automates claims-processing operations.

"Most of your savings come from reducing personnel," says Mike Nieberding, Empire Blue Cross vice president of advanced technologies, emphasizing that the em-

Evasive action, *page 84*

▶ First National Bank of Chicago's Gamile Sakla: *Work-flow analysis met with employee resistance*

Evasive action

CONTINUED FROM PAGE 83

ployees knew job cuts would be accomplished by attrition.

Another reason employees dig in their heels is their conviction that if they share what they know, their importance to the company will vanish, analysts say.

"It depends on the corporate culture. For some, knowledge is power, and they don't want to share what they know," says Brownell Chalstrom, president of Chalstrom Consulting in Oakland, Calif.

"If what got them promoted in the past were individual cowboy approaches and they think that will be taken away, then you have a problem," he says.

No more multitasking?

Workers can also fear that the impending work-flow system will neutralize or "de-skill" them. Fear of "de-skilling" is more widespread where employees perform many subtasks and the new system threatens to shrink their job to one task, Bear says.

Failure in the preliminary analysis to understand exactly how employees work can lead to a work-flow system that contains the inefficiencies of the original process, experts say. And that result, in turn, can cause information systems managers to resort to a little creative storytelling themselves.

Glass says many IS managers have to lie to their managers because initial estimates for cost, savings and development time aren't met. But evasive action isn't the only obstacle that IS managers may face in trying to assess the work process. The degree to which a company has trouble analyzing how people work has a lot to do with the company's motivation for re-engineering the workplace, experts say.

> "If what got them promoted in the past were individual cowboy approaches and they think that will be taken away, then you have a problem."
>
> **Brownell Chalstrom**
> **Chalstrom Consulting**

> "It's a tough process to get group consensus without humiliation."
>
> **Mary Schramke**
> **Aetna Life and Casualty**

> "I interviewed seven people in the same positions and got seven different descriptions of what they did."
>
> **Peter Stiles**
> **Advantage Design**

A common approach to redesigning business processes seeks to reduce the number of steps in a process and then automate the way in which the steps are performed by serially rerouting things. This approach is often coupled to reducing and de-skilling staff, and, Bear says, usually leads to demoralized employees.

Another approach is to augment employees' access to information and use work-flow methods to automate only lower-end administrative tasks after employees have made pertinent decisions.

Figuring out how jobs get done

And just as approaches to business process redesign vary, so do the methods for discovering exactly how people work. Typically, companies interview a representative group of employees about their work methods. After determining how a job is done, they separate the process into small steps, then hunt for redundancies and inefficiencies.

Mary Schramke, project manager at Aetna Life and Casualty Co. in Hartford, Conn., found that the interview method ignored the important relationships between employees.

So, in May 1991, before deploying an image-based claims-processing work-flow system in Aetna's Tewksbury, Mass., office, Schramke and consultants from Digital Equipment Corp. developed teams that crossed job boundaries. The team then had to agree on how a claim was handled from start to finish in a typical day of operation.

"We had many heated discussions about definitions of what something was and how it was done," Schramke recalls. "It's a tough process to get group consensus without humiliation."

To encourage participation, Schramke says, they had to convince the employees that there would be no punishment for telling the truth.

"Within a workgroup we got them to a consensus by figuring out what our business is and who our customers are. We listened to their ideas for change, and they were all full of ideas," she says.

At Bankers Trust Co. in New York, coming to a common definition of work-flow processes was a matter of getting employees to accept certain language conventions from their consultant and work-flow vendor, Action Technologies, Inc. in Alameda, Calif.

"I had a user working with me on the project," says Jeremy Keisman, vice president of global assets technology at Bankers Trust, "and I literally had to physically drag him to meetings. We all had to learn to like Action Technologies' syntax and language and buy into their philosophy. It can be dogmatic."

Completing a task

For example, every piece of work has a "customer" and a "performer." Once a task is performed, the customer must declare satisfaction before the task can be considered completed, Keisman says.

But once employees got used to the language, they cooperated. Even the IS group adopted the customer-and-performer philosophy and began communicating in terms of obtaining satisfaction while working on behalf of customers.

Ultimately, working with employees involved in work-flow analysis requires IS managers to think in ways they are not used to thinking, Keisman says. For instance, "We've always done traditional data processing. None of us had any experience with how you change people and the way they work. I didn't know how little I knew," Keisman says.

Without layoffs as an objective, some

Professional success

CIO survival: Study gives new view

By Allan E. Alter
WASHINGTON

What's the secret of survival for CIOs? Contrary to conventional wisdom, it doesn't matter whether the CIO reports to the CFO or the CEO or sits on the executive board, according to a recent British study.

The report, presented at the Society for Information Management's annual conference here Sept. 21, was conducted by Professor Michael J. Earl, director of the London Business School's Centre for Research in Information Management. Earl looked at 20 surviving and "non-surviving" British chief information officers.

Earl came to other contrarian conclusions: Survivors included CIOs in decentralized corporations and non-information-intensive industries, where CIO turnover is supposedly especially high.

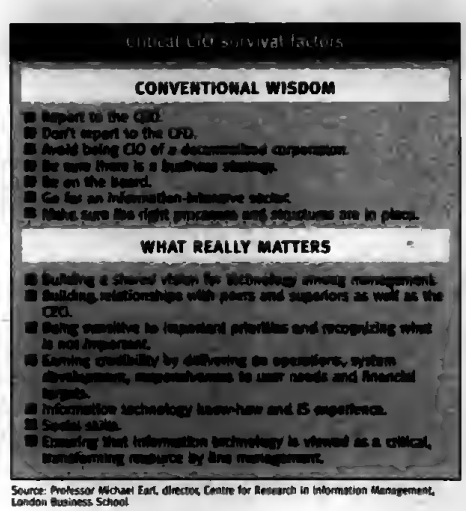
All the information systems executives who came from general management did not survive, Earl said; they lacked the know-how to manage the function and cope with IS issues.

Building a shared information technology vision among all senior executives was the most critical success factor, Earl said. "Non-survivors waited for a vision to appear.... They couldn't get a focus." Survivors found one or two business areas where information technology could add value to the company and persisted in building and sharing the vision of technology's contribution to the business.

Building that vision

Social skills and relationship-building with peers as well as the CEO and other superiors were important to build a shared vision as well as create coalitions, influence perceptions and understand the business.

"I think Earl's critical survival factors are right on," said Bill Heuser Jr., vice president of the Information Services Division of the New York City Transit Authority. "We have to build relationships with our peers. We don't all have the opportunity to have that strong a relationship with the CEO."



Source: Professor Michael Earl, director, Centre for Research in Information Management, London Business School

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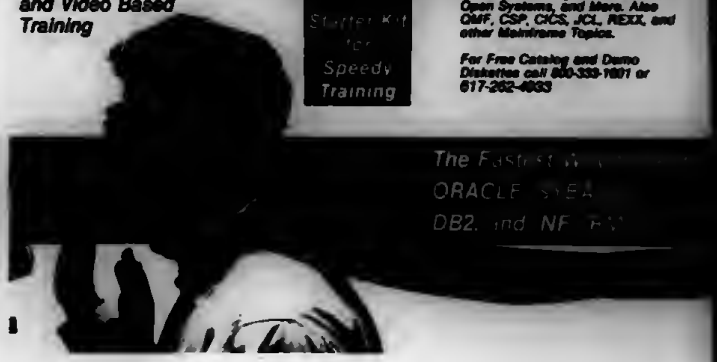

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managers say, the analysis is much easier.

Before doing the up-front analysis, "we made it clear that we were not reducing jobs," says Richard Hieb, executive vice president and chief administrative officer at Western Bank in Medford, Ore.

Western is installing an imaging system from NCR Corp. to track the documents in the mortgage process. The goal is to reduce the amount of paperwork employees must handle with each loan so they can keep up with volumes that are increasing by 35% to 40%.

It wasn't hard to convince employees that their cooperation would lead to an improved work life: The bank is growing and they were feeling frustrated and overwhelmed by the current paper processes. "I met no resistance whatsoever," Hieb says.

Never an easy job

But many managers find that even without employees fearing the ax, it can be difficult to discover how employees do their work.

Peter Stiles, a consultant at Advantage Design, Inc. in Chicago, discovered this recently while assisting KLM Royal Dutch Airlines with a business process redesign.

"I interviewed seven people in the same positions and got seven different descriptions of what they did," Stiles says.

Confusion doesn't always stem from employees' apprehensions or ill will. "It is not that they aren't cooperating," Koulopoulos says, "it's just that it is very complex to understand what people do in a particular process." ■

Intelligence Files

The virtually real office

Rather than bring a touch of home to the office, the Virtuost project in the UK will bring the office to those who work from home.

The three-year project, due for launch next month by BT with the support of the Department of Trade and Industry, is believed to be the first systematic effort to apply virtual reality to a business environment.

There's no telling what Virtuosi's ultimate impact will be, but it could signal the beginning of the end for expensive corporate headquarters.

Because virtual reality offers the "most intimate and direct method of interacting with a computer, and hence with the users of other computers," BT's Alastair Rogers says, the corporation could cease to exist as a physical entity.

And, in addition to regular staffers, consultants or individuals with specialized skills could link their personal virtual working environments with a corporate environment for the duration of their contracts.

Source: "Real work in a virtual office," *Financial Times*, Sept. 3, 1993

Comdata redesign project

Comdata Corp. in Brentwood, Tenn., a provider of electronic funds transfer services to the trucking and gambling industries, is beginning a work-flow re-engineering project in its bank reconciliation department.

The system, which will control the flow of electronic file folders, should enable Comdata employees to find canceled checks in two minutes rather than hours. They will also be able to fax copies of the checks to customers while the customer waits on the phone.

The system will replace microfiche with laser disk storage and mainframe applications with an on-line, client/server based system. Completion is expected within the next six months.

Broadway & Seymour, Inc., a systems integrator based in Charlotte, N.C., will help implement the new system.

Source: Broadway & Seymour, Inc., Charlotte, N.C.

Executive Track

Andersen Consulting has appointed **Terry Neill** managing partner of its worldwide Change Management Services practice. Since 1989, Neill has been managing partner of the UK and Government and Services Division; he replaces Chuck Winslow, who will now concentrate on the change management practice for the Americas. Neill will be based at Andersen's Chicago headquarters, and he will report to Skip Battle, managing partner of market development.

Business long-distance telecommunications specialist Cable & Wireless, Inc. in Vienna, Va., has named **Lee Scalzott** to the newly created position of vice president of applications software development. In his new position, Scalzott will be responsible for the development of applications software for network and informations systems. Prior to his appointment at Cable & Wireless, Scalzott was director of technology, resource and production services at MCI Communications Corp.

Shawmut National Corp. has appointed **Alan R. Buffington** executive vice president of Shawmut Bank and Shawmut Bank Connecticut and head of the corporate services group. Prior to joining Shawmut National, Buffington was senior vice president and head of systems for Cigna Corp.'s employee benefits group.

Doug Lewis, Pratt & Whitney vice president of IS since 1988, last month was named the first chief information officer at the **AT&T Network Systems** group in Morristown, N.J. Lewis will report to AT&T CIO Ron Ponder and to Dan Stanzione, the $10 billion telecommunications equipment business group's chief technical officer.

John Collins, vice president of MIS at **Hallmark Cards, Inc.**, will retire in July 1994. **James C. Miller**, formerly vice president of information technology at **James River Corp.** in Richmond, Va., has been tapped to succeed Collins at the Kansas City-based greeting card company.

Miller will hold the title of vice president of information technology; he has held positions in finance and information technology at United Technologies Corp., Upjohn Co. and the former American Can Co. as well as James River.

The New York Times Co. has promoted **Richard H. Gilman** to senior vice president of operations at *The New York Times*. He was previously vice president of systems and technology. Gilman will be responsible for the direction of production, systems and technology for the newspaper. **Raymond E. Douglas**, currently group director/publishing, systems and technology, will succeed Gilman in his previous post.

Calendar

OCT. 17-OCT. 23

OS/2 Professional Interchange Conference. Palm Springs, Calif., Oct. 17-20 — Contact: OS/2 Professional, Rockville, Md. (203) 261-6227.

Sapphire '93. San Diego, Oct. 17-20 — Contact: SAP America, Inc., Philadelphia, Pa. (215) 521-4500.

MathWorks, Inc. Cambridge, Mass., Oct. 18-20 — Contact: Joanne Dawson, The MathWorks, Inc., Natick, Mass. (508) 653-1415.

Technetron '93. Boston, Oct. 18-20 — Contact: United States Society of Wang Users, Chicago, Ill. (708) 652-3898.

Scan-Tech '93. Philadelphia, Oct. 18-21 — Contact: Scan-Tech '93 Registration, Ventura, Calif. (800) 228-1064, ext. 117.

Advanced Application Development Technology Conference and Exposition. Boston, Oct. 18-22 — Contact: Digital Equipment Corp., Andover, Mass. (508) 470-3880.

C++ World. Dallas, Oct. 18-22 — Contact: SIGS Conferences, New York, N.Y. (212) 274-0640.

The Object Conference and Exposition (Object). Boston, Oct. 18-22 — Contact: Digital Equipment Corp., Andover, Mass. (508) 470-0526.

Software World USA. Boston, Oct. 18-22 — Contact: Digital Consulting, Inc. Andover, Mass. (508) 470-3880.

Commercial Applications of Parallel Systems. Austin, Texas, Oct. 19-20 — Contact: MicroElectronics and Computer Technology Corp., Austin, Texas (512) 343-0978.

Developers Conference. Boston, Oct. 19-21 — Contact: Michelle Scott, Natural MicroSystems, Natick, Mass. (508) 650-1365.

Media Summit. New York, Oct. 19-21 — Contact: Debra Lee, Reed Exhibition Cos., Stamford, Conn. (203) 352-5297.

PC Expo. Chicago, Oct. 19-21 — Contact: Bruno Blenheim, Inc., Fort Lee, N.J. (201) 829-3976.

Capacity Management Forum: "Performance of Networked Systems." San Francisco, Oct. 20-22 — Contact: The Institute for Computer Capacity Management, Inc., Phoenix, Ariz. (602) 997-7374.

OCT. 24-OCT. 30

Information Technology Association of America (ITAA) Management Conference. Seattle, Oct. 24-27 — Contact: ITAA, Arlington, Va. (703) 284-5355.

Wireless and Portable Computing Technical Forum. Burlington, Mass., Oct. 25 — Contact: Franson, Hagerty & Associates, San Jose, Calif. (408) 453-5220.

Geoworks Software Developers Conference. "GEOS: The New Profit Platform." Burlingame, Calif., Oct. 25-26 — Contact: The Bohle Co., Los Angeles, Calif. (310) 785-0515, ext. 227/233.

Common Desktop Environment Developers Conference. San Jose, Calif., Oct. 26-26 — Contact: Uniforum Association, Santa Clara, Calif. (408) 986-8840.

CD-ROM Expo & Conference. Boston, Oct. 27-29 — Contact: CD-ROM Exposition & Conference, Dedham, Mass. (617) 361-0817.

OCT. 31-NOV. 6

Seventh International Conference on Design for Manufacturability. Orlando, Fla., Oct. 31-Nov. 4 — Contact: Management Roundtable, Boston, Mass. (617) 232-3090.

James Martin World Seminar. Los Angeles, Nov. 1-5 — Contact: Susan Levine, Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090.

Federal Imaging 1993. Washington, D.C., Nov. 2-3 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

NOV. 7-NOV. 13

Fourth International Conference on Applications of Software Measurement '93. Orlando, Fla., Nov. 7-11 — Contact: Applications of Software Measurement, Jacksonville, Fla. (904) 268-9639.

Share Fall 1993. Long Beach, Calif., Nov. 7-10 — Contact: Share headquarters, Chicago, Ill. (312) 644-6610.

ICCAD '93. International Conference on Computer-Aided Design. Santa Clara, Calif., Nov. 7-11 — Contact: Association for Computer Machinery, New York, N.Y. (212) 869-7440.

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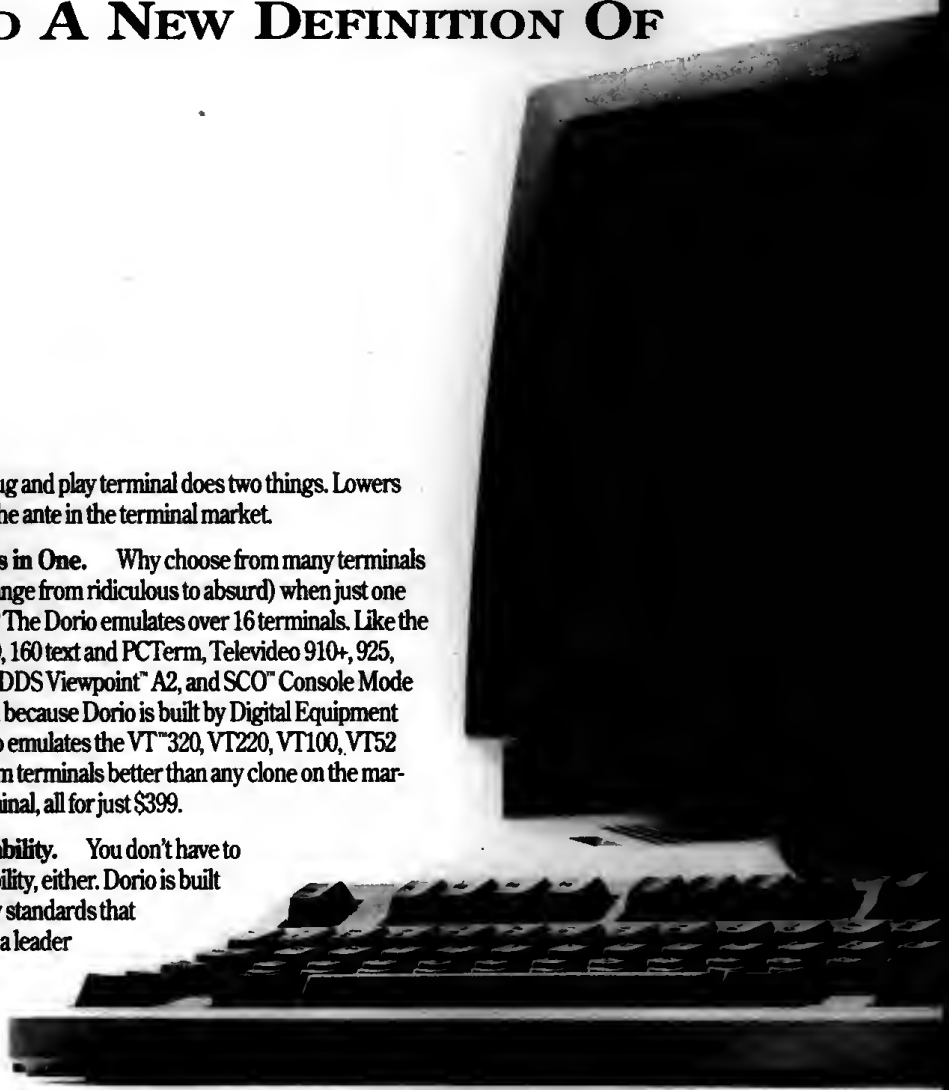

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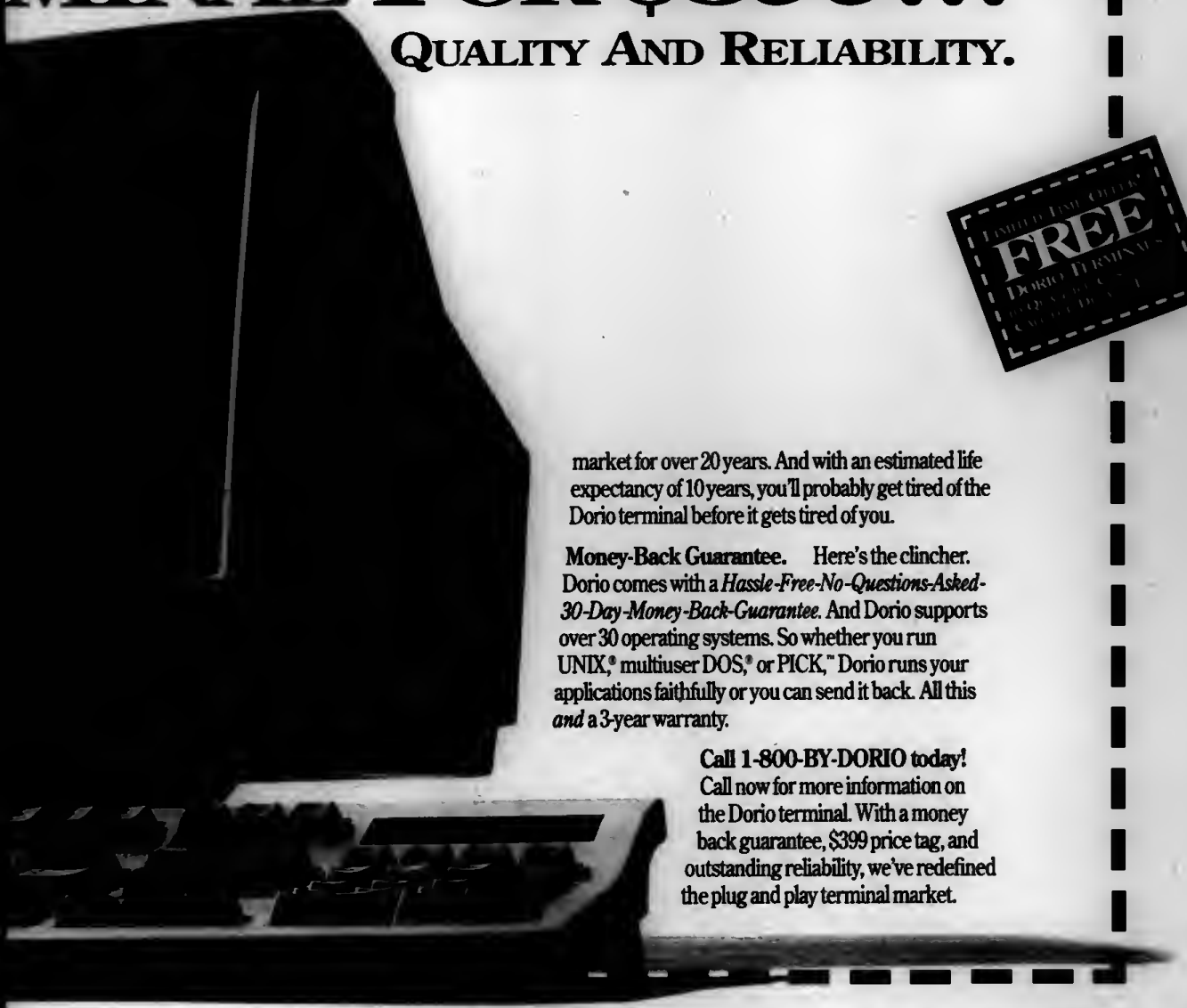

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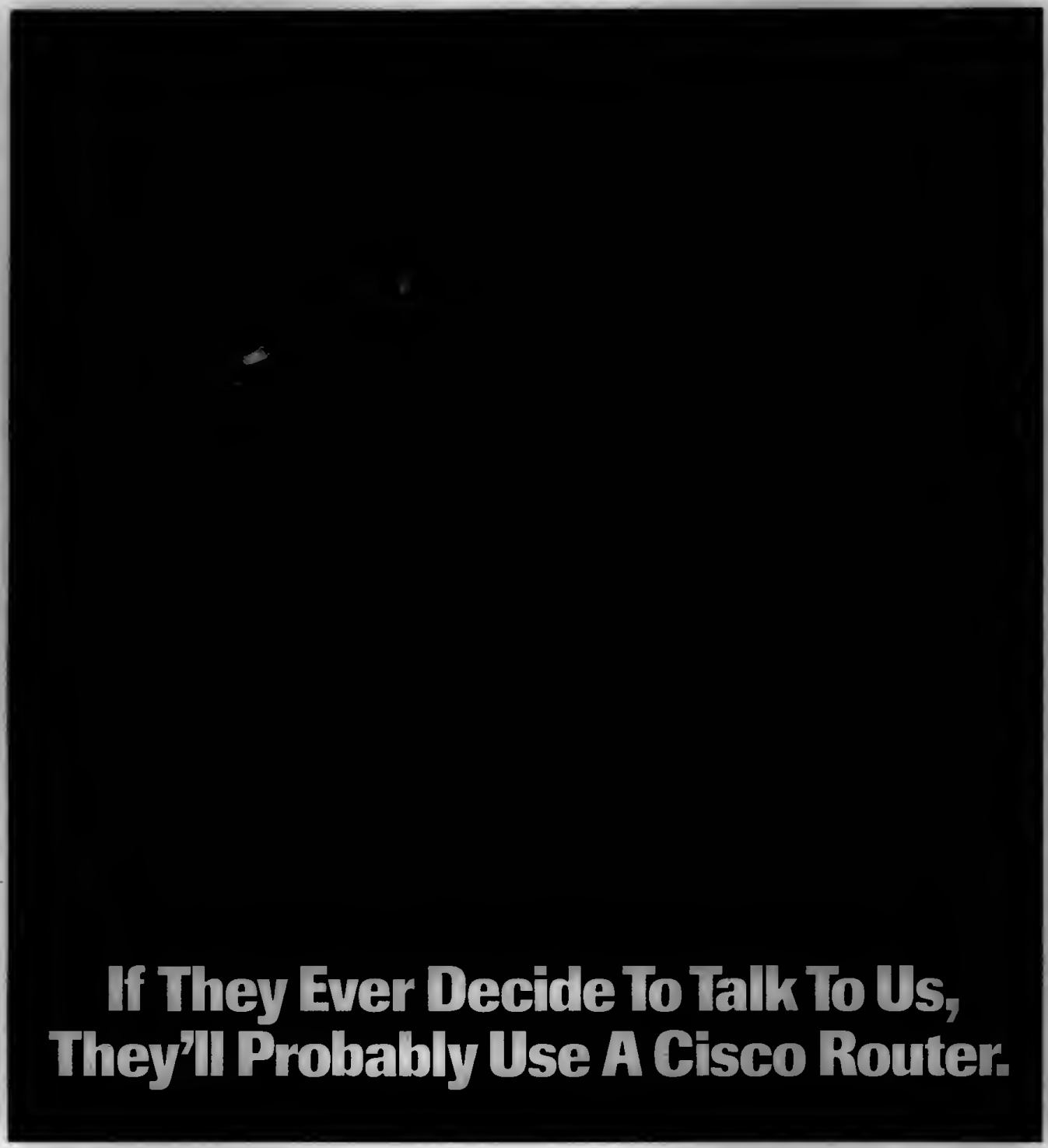

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The CW Guide to LAN Operating Systems

Starting to run your company on LANs brings new complications. Here are answers to 10 common questions technical managers have when dealing with LAN operating systems.

SURVIVAL GUIDE

1. What is required of an "enterprise" network operating system, as opposed to a workgroup network operating system?

An enterprise network operating system needs the following:

•**A scalable, multipurpose name service.** In the past, name services have not scaled well geographically and have supported more than 15,000 users only with difficulty. At the least, users will want the name service to contain data from user profiles, a data dictionary, an application repository and data for resource/network administration.

•**A regulator mechanism** (such as load balancing or reconfiguration tools). Data and applications will be distributed, and they will move over time as the network changes. The network operating system should adapt optimally to these changes.

•**A "dual view" capability.** It should provide the ability to view and administer the network equally well as either one large computer or as a network of distributed data, applications and resources.

•**Virtual storage in a heterogeneous environment.** In other words, data and applications should be available across platforms, suppliers and the enterprise but in a least-cost way such that access is almost instantaneous 99% of the time. — *Wayne Kernochan*

2. How do you see NT Advanced Server fitting into a company whose LANs operate under NetWare, Pathworks, Vines or LAN Server?

NetWare users will first find a place for Microsoft's Windows NT as a client. Novell is in the process of releasing a requestor that will let NT clients use NetWare. This will give users a chance to test the NT waters.

Novell has indicated it will also eventually support NT Advanced Server as a NetWare server, much as it does now for OS/2. One advantage to this is that NetWare running under NT may be more reliable than a standalone server, since it will run as its own task apart from the NT kernel.

It may also be possible, with the right software, to "bridge" two networks, one using Microsoft LAN Manager and another using NetWare. This will allow shops to create new applications using the full capabilities of NT and also share data with the existing network. — *Noah Ross*

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Although Microsoft
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Survival guide

CONTINUED FROM PAGE 89

would like nothing better than to see NT Advanced Server replacing NetWare, it's unlikely that much of that will happen in the next year. It will take about a year for a reasonable selection of NT drivers, connectivity pieces and applications to appear. Secondly, NT's networking function, although impressive for a 1.0 release, is significantly less than NetWare's and is also slower in benchmarks we've seen.

So I think the likely place for NT is as an applications server closely coupled with a made-to-order application (something like a database) that requires too much power for DOS/Windows. — *George Schussel*

- Market domination.
- Broad range of products
- Strong strategic alliances.
- Many well-trained, knowledgeable users.

- Immature network management needs needs work.
- Undeveloped WAN functionality (i.e., no compression).
- Integrated applications just beginning to appear.

.....

NT Advanced Server must first distinguish itself by being a very good citizen in the heterogeneous corporate network, while outpacing its competition as a workgroup or departmental server. In other words, NT Advanced Server and the accompanying NT-based servers (SNA Server, SQL Server) must be the best at integrating with preexisting enterprise networks such as IBM's Systems Network Architecture.

Coexistence with NetWare will be a bit problematic until Microsoft and Novell stop shooting at each other. NT will not fit with Vines, which was designed as a complete solution. It is a clean fit with Pathworks because of their common LAN Manager heritage. LAN Server and NT working together is possible but not likely. LAN Server is going to offer a number of advanced distributed computing elements not currently supported by NT. — *Michael D. Millikin*

3. What would be a compelling reason to switch from NetWare to another LAN operating system?

Cost is one reason. Conditioned by PC software prices, users are now looking for LAN software installation to be as simple as PC software at $100 per node and scalable indefinitely.

Another reason would be the availability of high-end, and especially administrative, scalability. History has shown that the ability to support large-scale networks requires real-world experience with progressively larger customer implementations. Novell is steadily gaining that experience in the 1,000-user range but has a ways to go. So do most of the LAN operating systems available today.

At present, I don't see interoperability links to enterprise systems, Windows compatibility or robustness as reasons compelling enough (in dollar or strategic terms) to switch. — *Wayne Kernochan*

4. Are there benefits to using the same operating systems on your desktops as on your LAN?

It would be easier for the systems administrator, but the user doesn't get anything out of it.

Some people say Microsoft will begin to more tightly couple NT on the desktop and NT Advanced Server on the back end. I don't see it happening though. What if NT isn't a big splash on the desktop? They'll want NT Advanced Server to be generally available to as many clients as possible. Mixing and matching is part of the attraction of client/server.

Tightly integrated environments represent the old way of doing things. People are buying whatever they want and then struggling to link them up. Because the world is moving to objects, you want to be able to pop out the server when necessary. You couldn't do that if you had a tight coupling between the front and back end. — *John Faig*

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Sure there are benefits. Every additional pairing increases the burden of interoperability.

Whether you are looking at OS/2, Unix or Windows on both the clients and servers, a homogeneous environment is the easiest.

However, it doesn't map to reality. You can keep your workgroup homogeneous (maybe), but the entire enterprise? Forget it. — *Michael D. Millikin*

5. What should you look for in a LAN operating system for your application development purposes?

There are a couple of critical factors.

First, support for a range of application logic distribution mechanisms, such as remote procedure calls, message-passing and transactional conversations.

Second, a distributed object-oriented technology, such as AppWare from Novell, Distributed System Object Model (DSOM) from IBM and sooner or later Cairo from Microsoft. Until creating net-

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COMMENTARY by KEN MACKIN

Beyond the data shuttle

I recently reviewed the most popular LAN operating systems. I filled ont feature tables and suitability guides and ran scripts to assess basic functionality. Slowly the thought came to me: LAN operating systems have become a mature technology.

The only place LANs need to grow up is on really big networks, where really big interconnection, maintenance and management issues remain unresolved. For LANs with less than 200 users, the LAN operating systems meet most users' basic data transportation needs.

With so very little to differentiate them, vendor marketing has assumed a greater importance for LAN operating systems in the last year. Recent products seem tied less to meeting real customer needs than to protecting market share with scads of "me-too" products and services.

Novell reaction

Novell's bundling of Message Handling Service with NetWare 3.12, for example, is a direct response to Microsoft's inclusion of mail within its Windows networking products.

I don't mean to single out Novell — a lot of other companies are doing this, too. They're at a crossroads, and they know it.

If building data transportation schemes is not enough, what will network operating systems companies do for revenue?

The answer is application services that use networks thoroughly. Today's operating system infrastructure allows for true network products rather than stand-alone products adapted for network use.

Unfortunately for the vendors, the network applications market is not their sole domain. Take a look at Intel's Smart Network Services. Intel intends to make applications servers fully aware of the state of the network and automatically respond to changes in the condition of that network — making them self-regulating, if you will. If a server hard disk shows signs of failure, for instance, Intel's current backup server — called StoragExpress — already senses the impending failure and automatically backs up the server while it still can.

A defining product

This is the kind of product that will define "the network" down the road. It's the kind of product you should be demanding from your vendors.

The challenge for the network operating system companies will be to capture a piece of this market. In the attempt, they will take on mature and entrenched applications developers.

The battle will he bruising, and some will lose.

But end users and administrators will be victorious because they will have greater confidence that the network will give them reliable and rapid access to the tools they need to do their jobs. ■

Mackin is president of Product Logic, Inc., a network consulting firm in Atlanta.

Survival guide

CONTINUED FROM PAGE 90

works. AppWare and DSOM are the key to the future.

Third, tools that will exploit existing programmer skills, snoh as Cobol. (Yes, Cobol.) — *Michael D. Milliken*

6. Will single-image networks be attainable within the next few years? By single-image, we mean the ability to log on once and be able to access all resources on the network. — *Frank Monteleone, Nutrasweet Co.*

What I hear in this qnestion is: Can I slap a piece of software everywhere that can get past all the different printing commands, file systems and security mechanisms and merge them into one consistent "computer?" There has been a fundamental problem with the way the industry has chosen to approach this problem.

Because of continual advances in operating system technology, different operating systems and network operating systems are fundamentally different in their approaches to basic resource access. The solution would be to build a network operating system that is the "golden mean" of all the approaches. However,

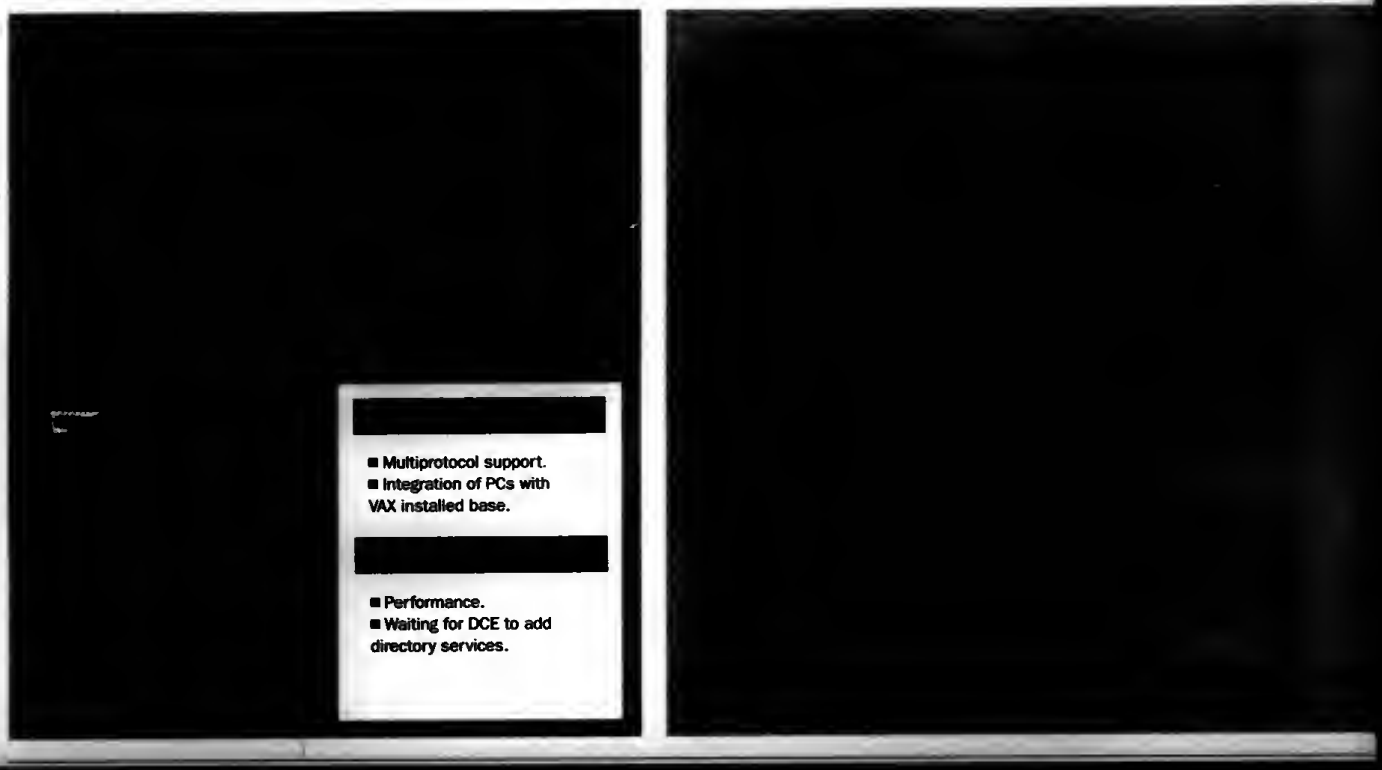
the industry has chosen to bet continually on one operating system (usually Unix) and base its single-image solutions on that. This, in turn, means that translating to other approaches is a major job with often imperfect solutions.

The result is that solutions such as Distributed Computing Environment/Distributed Management Environment are forever chasing a moving target: building in translators to one or more versions of NetWare, Unix, Windows NT, etc. I see no final solution until the industry views this as a problem and adopts a "golden mean" approach to solving it. — *Wayne Kernochan*

7. How many layers of software will we eventually have to manage? Right now I can see up to five or six in our firm. On the other hand, Microsoft is rolling all this functionality into NT, at least conceptually. So the question is, do you see the strata increasing or will there be an all-encompassing software layer? — *Frank Monteleone*

Layers will continue to be the norm. In client/server, different vendors will provide best-of-breed software. Some people are experiencing frustration, that it's costing more than they thought, that it's more integration than planned for, but the pendulum is still not going to swing

Survival guide, *page 95*


■ Multiprotocol support.
■ Integration of PCs with VAX installed base.
■ Performance.
■ Waiting for DCE to add directory services.

[redacted]

- Network management applications built into directory services.
- Strong integrated applications.

[redacted]

- Low market presence.
- No low-end, peer-to-peer offering.
- Lacks internetworking capability.

[redacted]

Survival guide

CONTINUED FROM PAGE 93

back to the old way of providing a single monolithic layer of software. — *John Faig*

8. When do you see NT and NetWare working from a common Simple Network Management Protocol (SNMP) management information base (MIB) that can be controlled from a single point? Too many products that claim to embrace the SNMP standard are using a proprietary MIB, often because the standard simply hasn't been set yet. — *Rich Tamborski, Amoco Corp.*

Not soon. Novell just this year anounced native SNMP support. Microsoft and Novell have other areas to agree on besides common MIBs. It would be the end of 1994 at the earliest. — *Michael D. Millikin*

9. We work in an environment of over 300 NetWare file servers and a variety of other types of servers. NetWare 4.0 addresses many of the user coordination problems we've been fighting, but it is not the total picture yet. We'd like the ability to read our mainframe user security directories to load and update all LAN environments. Ideally, some information, like those with "supervisor" status, would be uploaded to the mainframe for auditing purposes. Will this be possible with NT? — *Rich Tamborski*

There is no automatic way that I know of to coordinate mainframe and network security as suggested by this question. However, I can see no reason why an NT server application could not be written to do this. Of course, a mainframe component would also be required, along with a bit of mainframe systems programming.

One aspect of NT that is limited, however, is system administration. In a TCP/IP Unix environment, it is possible to fully maintain and update all system software. Neither Windows NT nor NetWare have this same capability, which makes administration over a wide-area network quite difficult. — *Noah Ross*

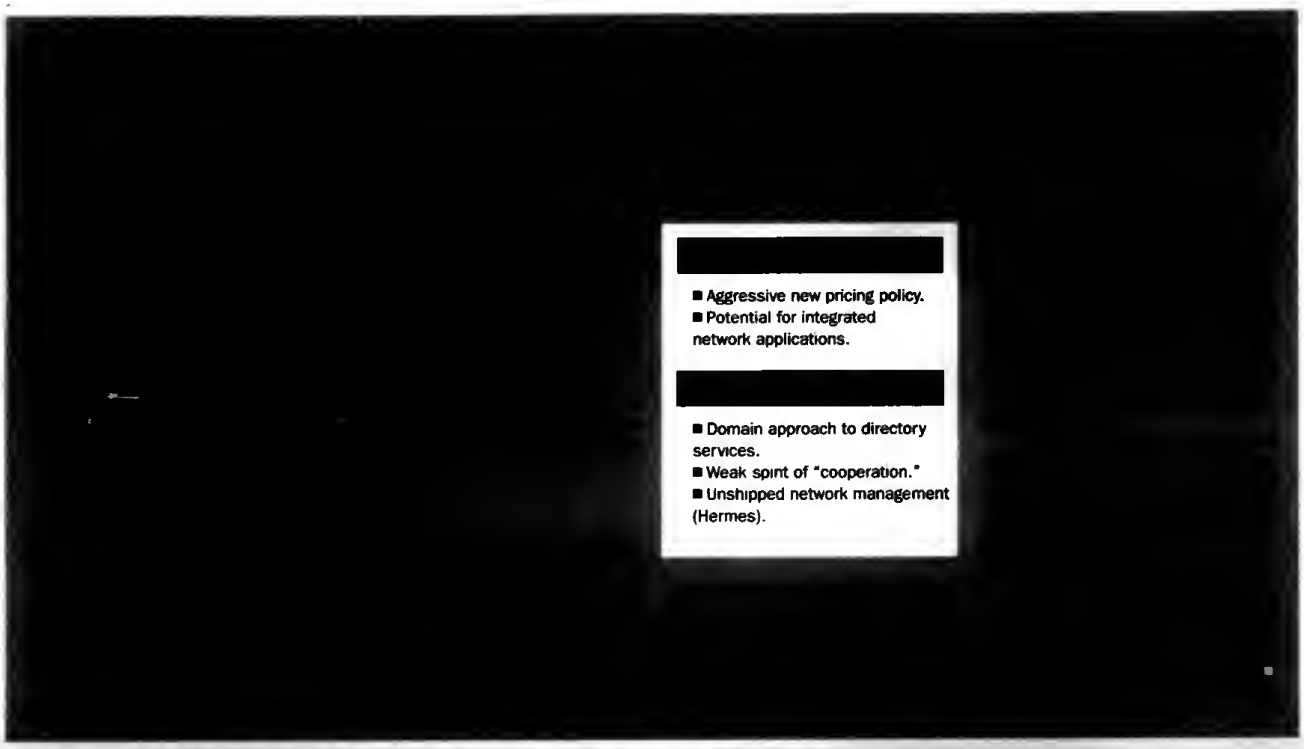
.....

I don't see that happening because NT is squarely positioned at the departmental level. Microsoft is still best at selling a lot of less complex products. With more sophisticated products like NT, companies will demand services and expertise. Microsoft isn't into that high-touch kind of game yet. — *John Faig*

10. We'd like to combine Pathworks and NetWare in the same system. Please explain the major difference between Pathworks and NetWare. We'd like to have everything on one system, but it doesn't seem to be a possibility. — *Anthony Infante, Credit Lyonnais*

Pathworks, like NT, is a peer-to-peer network. Each user is a node on the network that can either be a client or a server. With NetWare, each user is either a client only or a server only. NetWare uses the IPX protocol while Pathworks uses DECnet or TCP/IP.

The Pathworks for DOS-NetWare coexistence product now lets Pathworks run on an IPX network and access NetWare services. Another option is that Pathworks and NetWare can be bridged together by making one PC a gateway that has hardware for both DECnet and NetWare. — *Noah Ross* ■



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COMMENTARY by MARC DODGE

Democracy or enlightened dictatorship?

The network operating system battles are a tabloid's dream come true: Will Microsoft's Windows NT humble Novell's NetWare? Will IBM continue to fumble LAN Server and OS/2? Will the FTC drop-kick Microsoft?

But while this makes for thrilling reading, it overlooks the real issue: With NT's spectacular leap into mediocrity, it is obvious that none of the leading players is going to pre-empt the competition. We are stuck with the lot of them indefinitely.

So, the issue for us, as decision-makers, is not selecting a "winner" in the network operating system "war." The issue is selecting a single system as the corporate standard and making it stick. Everybody hates standards: I attended a panel at NetWorld on corporate standards and their importance. One-third of the audience walked out after the second speaker. I would have walked too — if I hadn't been the moderator.

The hard truth is that only an extreme optimist would believe he could build true client/server applications with the hodgepodge of vendors and products we use today.

Client/server computing will make things really interesting. What will happen when we take all our stand-alone applications for various network operating systems platforms and attempt to interconnect them so we can share data across the company? We will have system integrators with ulcers the size of dinner plates.

Three years ago, I fought this battle in my company. We had 500 LANs using a common network system. After this fine start, an application development group decided it wanted another flavor. They showed with geometric logic and precision that they couldn't live without a different operating system.

They examined everything except the cost of training and supporting the end users. The users happened to outnumber the programmers by 10 to one. With the users' help, we calculated the support costs of a second corporate network operating system as $3.4 million. Guess what? The applications group did not get the new system.

Application development is messy and expensive with multiple systems. However, it is a day at the beach compared with integrated network management. Companies that enforce corporate standards will be the first to provide enterprise management of networks ... as they watch their competitors flounder.

That is because integrated network management is becoming possible for single-system shops. The democratic shops will be left with brute-force network management for the next half decade.

Each additional network operating system just about doubles the network management problem. As we add more operating systems, we add more products. As the number of pieces spirals out of control, all hope of managing the enterprise network disappears.

"Each additional network operating system just about doubles the network management problem."

Everybody complains about integrated network management. Sorry, but vendors don't have a silver bullet in the works. We have to build our own integrated management, and it starts with controlling the number of pieces to manage.

It is time to cut bait. Companies that continue with mindless development of distributed applications on many platforms have a problem. They are building the first legacy applications of the client/server era. ■

Dodge is a telecommunications manager at a Fortune 500 company.

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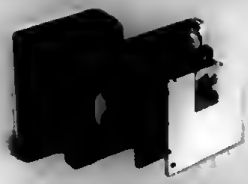

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COMPUTERWORLD BUYERS SATISFACTION SCORECARD

Banyan's Vines outpoints rivals with strong results in ease of use, support

By Kevin Burden and Michael Sullivan-Trainor

Two significant accomplishments for any vendor are to offer a product that is both easy to use and available on a number of heterogeneous platforms. Based on user ratings in our Buyers' Satisfaction Scorecard of LAN operating systems, Banyan Systems, Inc. has succeeded in both areas with its Vines offering.

With the highest ease-of-use score of the four market-leading products measured, Vines also bested Novell, Inc.'s NetWare, IBM's LAN Server and Microsoft Corp.'s LAN Manager in providing support for a variety of applications.

The results are based on user evaluations of a mixture of versions, with 52% of the NetWare users running Version 3.11 and a minority using NetWare 4.X.

Sixty percent of the Vines users were running Vines 5.5, reflecting the longer period of time that version has been available. The majority of LAN Server users were running Version 3.X, and 66% of the LAN Manager users were running Version 2.X.

Banyan's strategy of diversifying its support in a number of operating system segments, rather than fighting Novell exclusively on its DOS/Windows turf, is apparently paying off. A recent announcement included a strategic relationship with Hewlett-Packard Co. that will allow Vines to be ported to the HP 9000 platform.

NetWare compatibility

Perhaps the most striking Banyan strategic shift was to make Vines Enterprise Network Services available for NetWare. The product, which began shipping on schedule last January, makes Banyan's full line of services available to Novell NetWare users.

NetWare has continued to benefit from the surge of PC shipments and the ever-increasing need for LAN servers. The market grew 46% from 7.8 million nodes in 1991 to 11.4 million in 1992, according to Framingham, Mass.-based International Data Corp. (IDC).

While Banyan maintained a stable share of the market, shipping 750,000 nodes and 20,000 new licenses in 1992, Novell shipped 6.8 million nodes on NetWare and more than 300,000 new server licenses during the same period. IBM added more than 900,000 nodes and nearly 29,000 server installations, while Microsoft shipped more than 500,000 nodes and more than 16,000 servers of LAN Manager.

Though Novell holds the market edge, Banyan also claims superior compatibility with applications through its delivery last year of several server application programming interfaces.

Novell's application integration is done through third-party NetWare Loadable Modules (NLM), which provide only limited access to server statistics. Vines also scored highest in traditional strengths of network management and wide-area network performance.

Novell has improved its remote communications capabilities with its announcement of NetWare Connect at Networking Solutions Expo last month. The new NLM allows both outbound and inbound communications from the increasing number of laptop-equipped employees to be consolidated on a single integrated platform.

Remote-access ratings placed Vines well ahead of NetWare and NetWare well ahead of the other products. LAN Server achieved the lowest rating: 6.1.

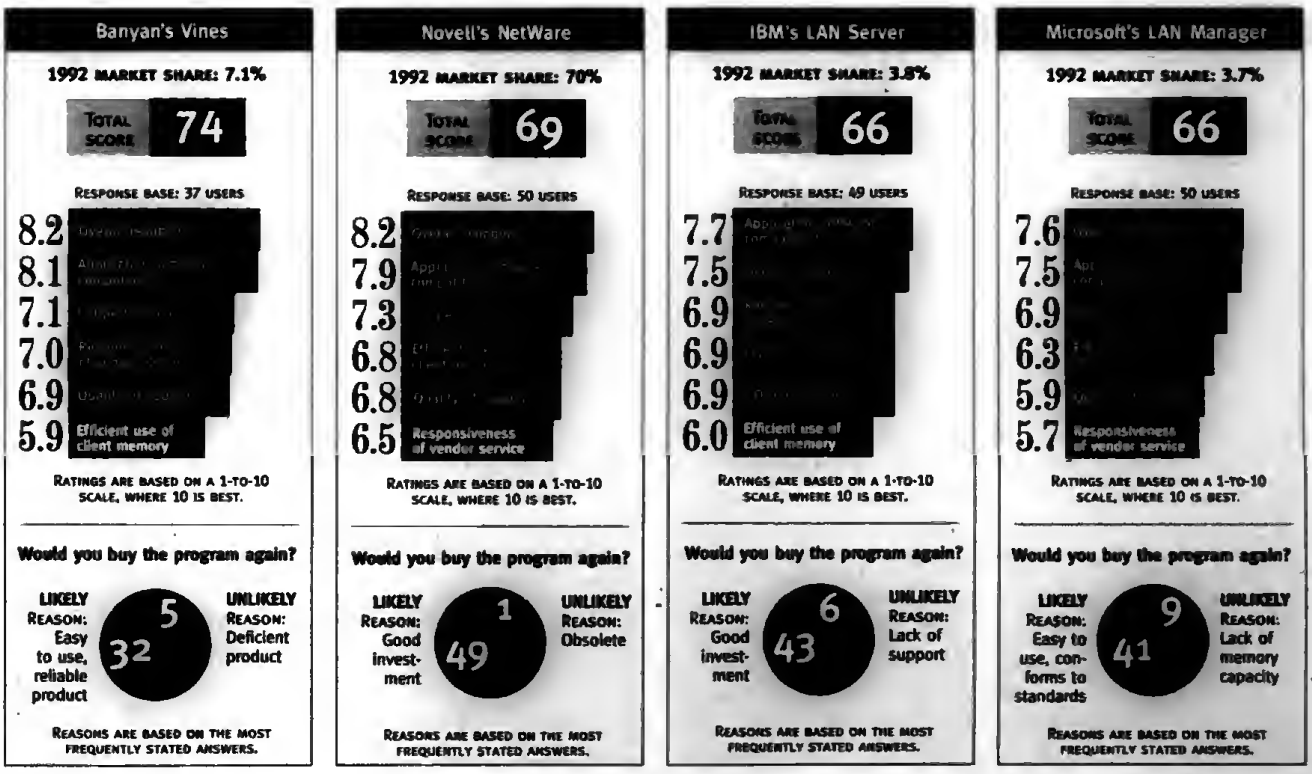
In addition to the Top 4 LAN operating systems rivals, a growing number of products are staking out a second tier of peer-to-peer LAN operating systems functions. Chief among these is Artisoft, Inc.'s LANtastic, which claims 20% of the installed base in this arena. The other contenders in the category, according to IDC, include Apple Computer, Inc.'s AppleTalk (18% share) and Novell's NetWare Lite (10% share).

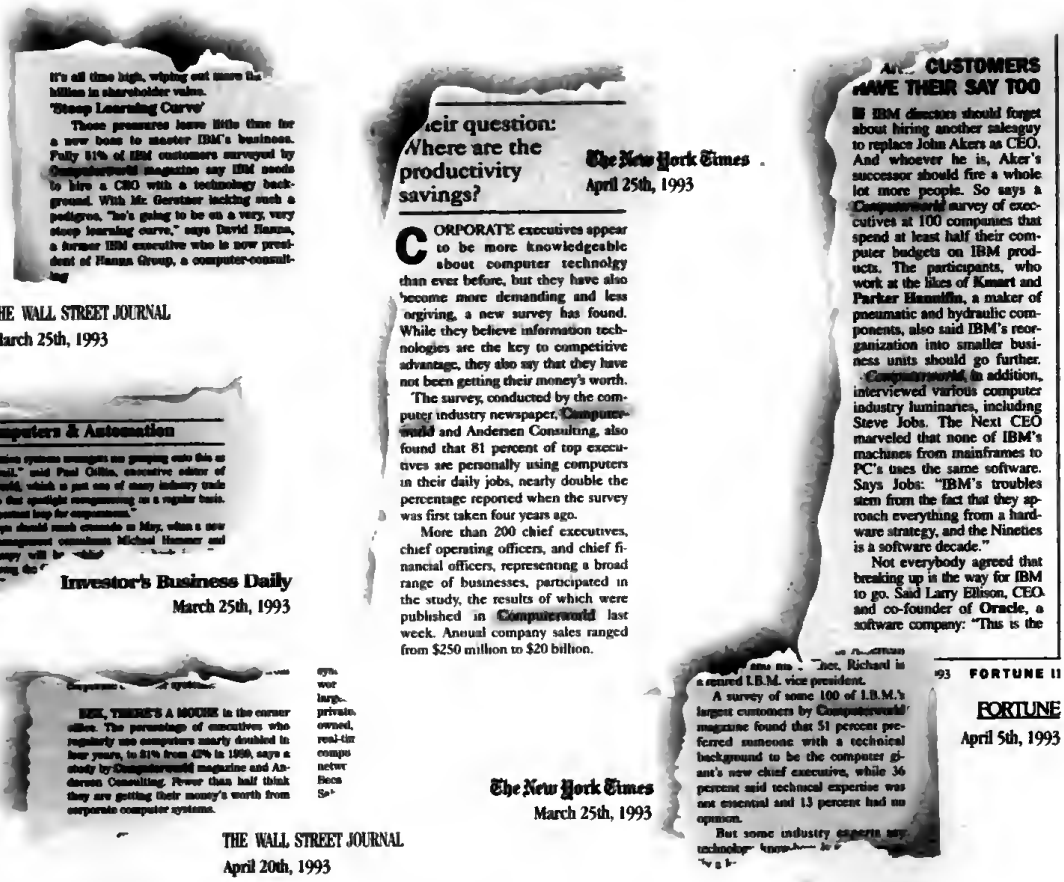
Thirty-two LANtastic users surveyed said they were very satisfied with the product, scoring it a nine on a 10-point scale. While citing its versatility as the major strength, users gave LANtastic a rating of eight or better in ease of use, ease of installation, use of memory, reliability and cost.

Methodology

The survey considered the four market-leading server LAN operating systems and the top peer-to-peer LAN operating system. Response bases of at least 30 users per product were obtained by First Market Research Corp. in Austin, Texas.

Names were supplied by *Computerworld* Database Division. *Computerworld* thanks IDC analysts Lee Doyle and Richard Villars, who contributed to this survey. For further information about how this evaluation was completed, contact Michael Sullivan-Trainor at (800) 343 6474, ext. 229. ■





it's all time high, wiping out more than
billion in shareholder value.
'Steep Learning Curve'
Those pressures leave little time for
a new boss to master IBM's business.
Fully 81% of IBM customers surveyed by
Computerworld magazine say IBM needs
to hire a CEO with a technology back-
ground. With Mr. Gerstner lacking such a
pedigree, "he's going to be on a very, very
steep learning curve," says David Hanna,
a former IBM executive who is now presi-
dent of Hanna Group, a computer-consult-
ing

THE WALL STREET JOURNAL
March 25th, 1993

Computers & Automation

"Information systems managers are grasping onto this as a Holy Grail," said Paul Gillin, executive editor of Computerworld, which is just one of many industry trade publications that spotlight reengineering on a regular basis. "It's an important buzz for corporations."

The hype should reach crescendo in May, when a new book by management consultants Michael Hammer and James Champy will be

"Reengineering the Revolution."

Investor's Business Daily
March 25th, 1993

eir question:
Where are the
productivity
savings?

The New York Times
April 25th, 1993

CORPORATE executives appear to be more knowledgeable about computer technolgy than ever before, but they have also become more demanding and less orgiving, a new survey has found. While they believe information technologies are the key to competitive advantage, they also say that they have not been getting their money's worth.

The survey, conducted by the computer industry newspaper, Computerworld and Andersen Consulting, also found that 81 percent of top executives are personally using computers in their daily jobs, nearly double the percentage reported when the survey was first taken four years ago.

More than 200 chief executives, chief operating officers, and chief financial officers, representing a broad range of businesses, participated in the study, the results of which were published in Computerworld last week. Annual company sales ranged from $250 million to $20 billion.

CUSTOMERS
HAVE THEIR SAY TOO

IBM directors should forget about hiring another salesguy to replace John Akers as CEO. And whoever he is, Akers's successor should fire a whole lot more people. So says a Computerworld survey of executives at 100 companies that spend at least half their computer budgets on IBM products. The participants, who work at the likes of Kmart and Parker Hannifin, a maker of pneumatic and hydraulic components, also said IBM's reorganization into smaller business units should go further.

Computerworld, in addition, interviewed various computer industry luminaries, including Steve Jobs. The Next CEO marveled that none of IBM's machines from mainframes to PC's uses the same software. Says Jobs: "IBM's troubles stem from the fact that they approach everything from a hardware strategy, and the Nineties is a software decade."

Not everybody agreed that breaking up is the way for IBM to go. Said Larry Ellison, CEO and co-founder of Oracle, a software company: "This is the

93 FORTUNE 11

FORTUNE
April 5th, 1993

BIG, THERE'S A MOUSE in the corner office. The percentage of executives who regularly use computers nearly doubled in four years, to 81% from 42% in 1990, says a study by Computerworld magazine and Andersen Consulting. Fewer than half think they are getting their money's worth from corporate computer systems.

THE WALL STREET JOURNAL
April 20th, 1993

The New York Times
March 25th, 1993

A survey of some 100 of I.B.M.'s largest customers by Computerworld magazine found that 51 percent preferred someone with a technical background to be the computer giant's new chief executive, while 36 percent said technical expertise was not essential and 13 percent had no opinion.

But some industry experts say

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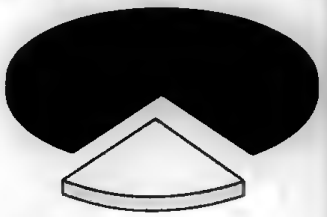

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22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data/Tele. Comm. Network Sys. Mgt., LAN Mgr., PC Mgr
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

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❑ Solaris (a) ❑ Mac OS (e)
❑ Netware (b) ❑ Windows NT (f)
❑ OS/2 (c) ❑ DOS Windows (g)
❑ Unix (d)

App. Development Tools
❑ CASE (h)
❑ C++ (j)

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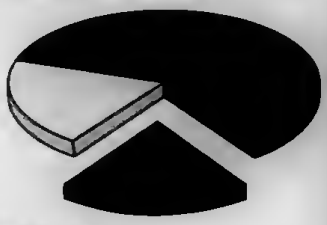

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80. Manufacturer of Computers, Computer-Related Systems or Peripherals
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23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
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❑ CASE (h)
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NT Advanced Server:
High on ease of use, compatibility; low on innovation, technical support

Windows NT Advanced Server

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

- Evaluators experimenting with Microsoft Corp.'s Windows NT Advanced Server said it was easy to install and use in their present environments, but they found few features that aren't duplicated by installed LAN operating systems from other vendors.
- Microsoft's service and support left something to be desired, and delays in full Novell, Inc. NetWare support are slowing users' ability to implement Advanced Server.

It's been called the "NetWare killer," but the four evaluators participating in this examination of Microsoft's Windows NT Advanced Server didn't think so. They gave it the same rating as a previous Firing Line evaluation of Novell's NetWare 4.0 [CW, April 12].

Released to lengthy and loud hype, Advanced Server was announced in late August on the heels of its parent operating system, Windows NT, and new database, Windows NT SQL Server.

But now is probably not the best time to be releasing a new network operating system. After many years of experience, experimentation and practice, many companies have developed network strategies based around NetWare or, less frequently, Microsoft's LAN Manager or IBM's LAN Server. Clearly, Microsoft will have a tough row to hoe in cracking through the active, long-term strategies of network users.

The evaluators who participated in this examination of Advanced Server were typical of today's networked organization. Representing more than 43,000 networked users, they work at a multinational chemicals firm, a military research lab, a global banking firm and a state government agency.

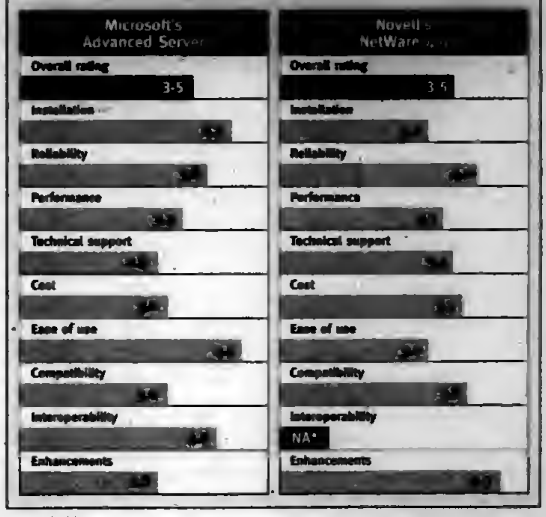
All had significant practical experience with a variety of network operating systems, including NetWare, LAN Manager, LAN Server, Apple Computer, Inc.'s AppleTalk and a variety of Unix-based TCP/IP systems.

The evaluators had been examining Advanced Server for periods of two weeks to six months, although none had progressed beyond initial evaluation steps. Only the government agency had made a significant enterprise commitment to Advanced Server.

The format for this evaluation was prepared with help from Howard Rubin Associates and Technology Investment Strategies Corp.

Microsoft's Windows NT Advanced Server

Ratings are based on user expectations on a 1-to-5 scale, where 1 is below expectations and 5 is above expectations. Ratings are presented in order of importance to users. NetWare 4.0 ratings are based on April 12, 1993 evaluation.



*Not applicable

Installation

Like the Windows NT operating system, Advanced Server is installed through a setup program and delivered on CD-ROM. That combination eliminates much of the disk swapping that network administrators faced in the past.

The Advanced Server installation program was favorably rated by the evaluators for a number of reasons.

First, it asked the evaluators salient questions throughout the process and properly installed drivers and options for network hardware. The program also handles hard disk issues such as partitions and supports disk striping.

Banking firm: "It takes about an hour to install. We had the technical background with LAN Server. But we couldn't import domain information [from LAN Server]."

Government agency: "If you've installed LAN Manager, it's quite a switch. [The installation program] detects network boards and gives options for protocols. It's really slick."

Reliability

Three evaluators reported minimal catastrophic failures with the release version of Advanced Server, although early beta versions did evidence problems.

The chemical company evaluator said his server had "locked-up" more than once, and he was concerned that this problem might get worse with additional users. The banking evaluator noted problems in connecting LAN Manager 2.2 client systems to the server. The government evaluator said his single crash was not directly traceable to Advanced Server.

Performance

The evaluators had not yet had the opportunity to complete full-scale load testing on Advanced Server. Most performance estimates were derived from small, isolated installations with minimal users.

Performance estimates were therefore based on the perceived execution times of Windows and DOS applications running on the server, as well as print server and file server throughput.

Military lab: "Performance was the same or maybe better than Sun [Microsystems, Inc.] workstations. DOS applications run a little bit slower, but there was no big difference running 16-bit Windows applications."

Banking firm: "We didn't use the NT File System because we wanted compatibility with our current database file systems. Network performance is typically not an issue for us because in client/server applications, you're not loading the network anyway."

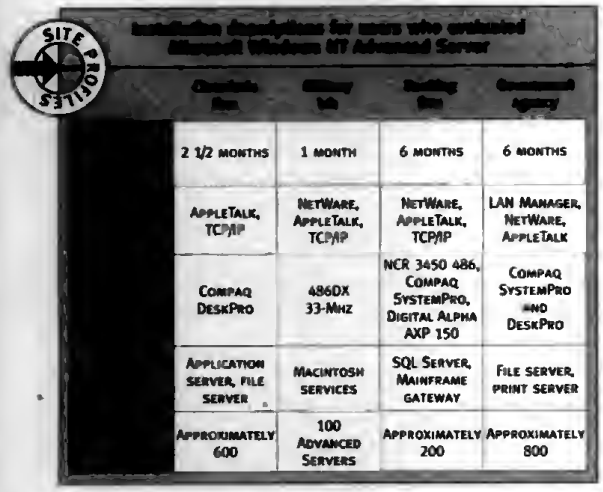
Technical support

The evaluators said they were not overly impressed with the technical support made available by Microsoft. They said support costs were high, and Microsoft did not deliver good support or documentation to those who hadn't paid for Microsoft support services.

Chemicals firm: "[Technical

Advanced Server, *page 102*

Microsoft: Support competitive;
Windows NT Advanced Server applications on the way



Installation descriptions for users who evaluated Microsoft Windows NT Advanced Server

Chemicals firm	Military lab	Banking firm	Government agency
2 1/2 months	1 month	6 months	6 months
AppleTalk, TCP/IP	NetWare, AppleTalk, TCP/IP	NetWare, AppleTalk, TCP/IP	LAN Manager, NetWare, AppleTalk
Compaq DeskPro	486DX 33-MHz	NCR 3450 486, Compaq SystemPro, Digital Alpha AXP 150	Compaq SystemPro and DeskPro
Application server, file server	Macintosh services	SQL Server, Mainframe gateway	File server, print server
Approximately 600	100 Advanced Servers	Approximately 200	Approximately 800

CONTINUED FROM PAGE 101

support needs] are more than we expected. We had some problems with the trusted domain concept and the registry database. People are going to need [technical] support for it during the first year."

Military lab: "[Microsoft] charges a lot for per-call support. We'll go through CompuServe and read UseNet."

Banking firm: "We have Microsoft primary support, and we are fairly active users. We haven't had to call Microsoft [since] we get as much help from CompuServe as anything else."

Government agency: "The beta-test documentation was better than the release version. If you're without a Microsoft service contract, they don't listen to you."

Cost

For most of the evaluators, Advanced Server costs were not a large issue. Microsoft is now charging $1,495 for an unlimited-use license for Advanced Servers, although prices are slated to rise to $2,995 after February 1994.

Military lab: "It's more expensive right now because of memory and hard drive upgrades, but over time it will be cheaper because we don't have to play with the configurations."

Government agency: "It's the same as any network operating system. It's slightly cheaper than NetWare and about the same as LAN Manager."

Ease of use

Ease of use was rated highly from an administration and configuration point of view. The evaluators found the Advanced Server utilities and tools to be powerful, intuitive and accessible. They said they liked the familiar and intuitive Windows NT user interface.

Military lab: "It is exactly like Windows. You need to learn about domains and workgoups, but the interface is the same. Domains may not work for us, but it makes sense to set up a network that way."

Banking firm: "The interface is familiar; managing access rights is straightforward. It all seemed to work very well compared with LAN Manager or LAN Server."

Compatibility

It was difficult for the evaluators to fully estimate compatibility with existing network applications, as there are few native, 32-bit applications currently available for Advanced Server.

However, all the evaluators had tested network applications written for MS-DOS and MS-Windows and found no significant compatibility issues.

Chemicals firm: "I've gotten comments from our developers that it will be quite a task to move [applications] from OS/2 LAN Manager to NT Advanced Server."

Military lab: "We cannot use any existing networking software under Advanced Server because all those programs use their own drivers."

Banking firm: "Without the ability to test NetWare applications, it's hard to say. We are able to run SQL Server application and OS/2 programs. But there is an issue in terms of integrating it into our [NetWare] environment."

Interoperability

Chemicals firm: "I was looking at options for interoperability, but Advanced Server doesn't look any different than LAN Manager."

Military lab: "Advanced Server has all the protocols built into it for shareware programs like Eudora and Qvpnet. It also has installed services for the Macintosh. Macintosh applications from my system went to the Mac and started running. Advanced Server can work as a Mac file server, and it can definitely work as a Windows or DOS file server."

Enhancements

Surprisingly, the evaluators gave Advanced Server a lower than expected rating for its enhancements over existing network operating system alternatives, such as LAN Manager, LAN Server and NetWare.

They said they liked the inclusion of built-in disk striping, security options and user profiles. Support for TCP/IP and trust relationships between different network domains won kudos. They were not pleased with the current lack of support for the IPX protocol used in NetWare shops, but attributed this to a delay by Novell rather than Microsoft.

Chemicals firm: "As much as it was hyped, we expected something really grand. But there is no directory service, no [Network File System] and no Telnet built into the box. It's a pretty graphical user interface on top of LAN Manager. It has built-in RAID with striping, but nothing that couldn't have been done with LAN Manager for the OS/2 product."

Banking firm: "There are more enhancements in the base operating system [Windows NT] and less in Advanced Server. But I'm happy with it."

Written by senior editor Garry Ray.

Microsoft responds

▶ **Applications availability:** SQL Server for Windows NT is already shipping. It takes full advantage of Windows NT's scalability. Many other server applications have been announced and will be shipping shortly.

▶ **Advanced Server and existing LANs:** Advanced Server provides benefits both as an application server and file server. As an application server, it delivers the power of a minicomputer operating system combined with the scalability of symmetric multiprocessing and RISC systems, along with the ability to work with systems already in place (e.g., NetWare).

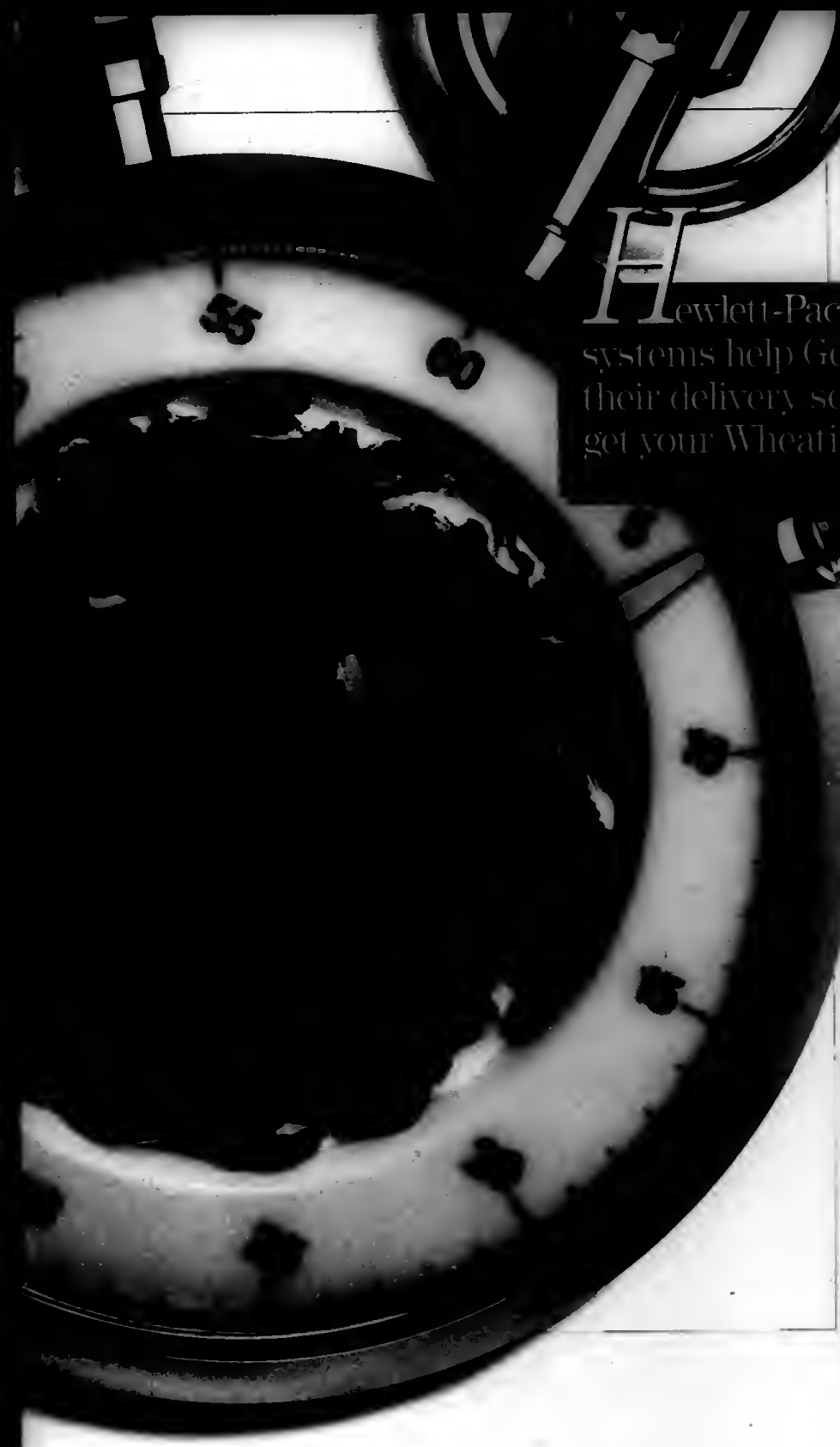
As a file server, the product gives users a single log-on to the enterprise and provides centralized management for administrators, fault-tolerance (including RAID-5) and remote and Macintosh connectivity.

▶ **NetWare Requester:** The Requester will allow Windows NT client systems to more easily access Advanced Server and NetWare.

It will also allow customers to more easily move data back and forth. Advanced Server already has the ability to act as an application server on IPX/SPX networks.

▶ **Technical support:** Microsoft offers competitively priced support. We work with 2,000 Solution Providers to offer third-party support, and we've trained more than 20,000 people on Windows NT and Advanced Server. Microsoft isn't the only source of support. Companies such as Digital Equipment Corp., Hewlett-Packard Co. and NCR Corp. also support Advanced Server.

We offer no-charge 30 days of setup and installation support for Windows NT (scheduled to end June 30, 1994). We have also set up a toll-free fax response system with the most common support issues available at (800) 936-4400. We have put our technical information and software libraries up on Internet (ftp.microsoft.com) as well.



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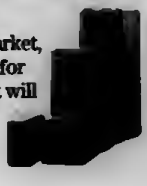

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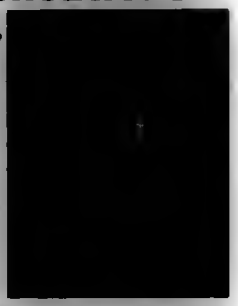

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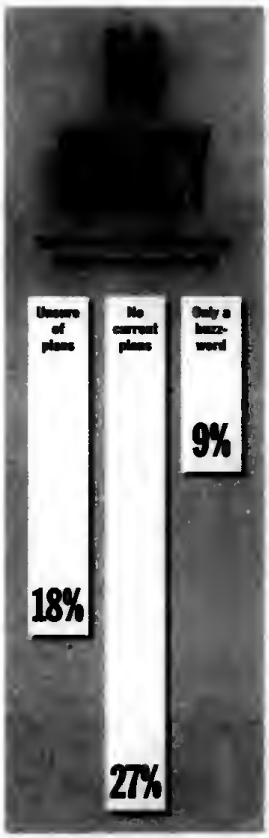
CLIENT/SERVER Breakdown

BY JOE PANEPINTO

Client/server veterans curse synchronization, scalability and staff problems



Source: International Data Corp. 1993 Global Survey of 858 IS executives in the U.S.

"Folks who went early into client/server development are 'strategically realigning,'" says **Brent Williams**, program director for PC software at International Data Corp. (IDC) in Framingham, Mass. "That means they are in full retreat."

Williams may be exaggerating to make a point, but it is one well taken. The promises of client/server computing — moving processing to where it is most economical, fastest and most flexible — have in the last five years been splashed across headlines, trumpeted at trade shows and hyped in advertisements. Still, 9% of the 858 information systems executives involved in IDC's 1993 Global IT Survey said they believe client/server is a buzzword (see chart at left). Another 45% either have no current client/server plans or are unsure about them.

This reticence is understandable when you listen to survivors' stories. Consultant **Cheryl Currid** talks of a client/server backup job that took 22 hours because of some botched SQL statements. IS chief **David Peach** had trouble keeping Holiday Inns Worldwide's data synchronized in a client/server financial reporting application.

"Discipline" and "planning" — words dear to the heart of every mainframer — need to find their way into client/server efforts, Williams says. "People [have] treated client/server in an emotional way — as a way of escaping the tyrannical discipline of building mainframe applications. They wanted to build code like

Client/server breakdown, *page 110*

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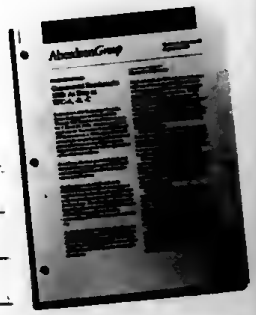

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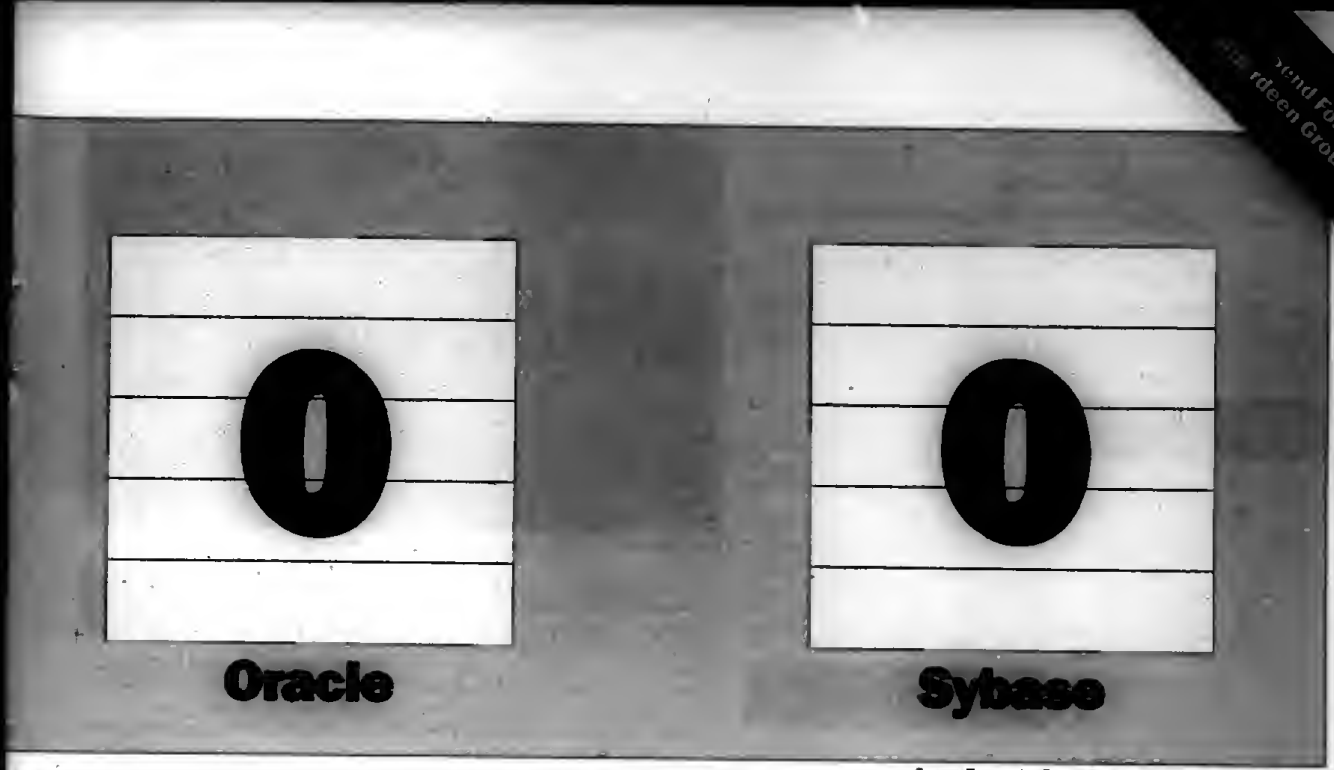

Source. Transaction Processing Performance Council (TPC), 1993.

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CONTINUED FROM PAGE 107

bohemians and just rush right in and hack code."

The unavoidable truth, however, is that building client/server systems that work takes rigor. "You can't just wish it away," Williams says.

What follows are the voices of many client/server veterans — the chief information officers, the systems integrators, the consultants — who talk about the problems and stupid mistakes that can crop up with client/server. Their experiences may help you avoid making mistakes of your own.

[redacted]

Client/server development is supposed to go like this: You embed a few SQL statements in your Cobol application, and there you have it: a client/server application that sends data requests across a network to a remote relational database management system. Wrong.

For one process manufacturing company, which used its Cobol programmer to write embedded SQL statements running against an Oracle Corp. back end, things weren't that pat, says **Cheryl Currid**, president of Currid & Co. in Houston.

"By the time [the programmers] were finished writing the client/server code, they had so messed up the SQL statements that a simple backup job took 22 hours! After a couple of weeks of fooling around with the system, blaming the network, blaming the software, blaming their mothers, they broke down and hired a SQL expert," she says.

"He unscrambled their muddled SQL statements [which were calling for complex multiple joins], cut out all the complex multitable joins and brought processing down to less than an hour."

[redacted]

"A typical [modus operandi] with client/server," says IDC's **Brent Williams**, "is that someone goes out with a 10-screen prototype and tests it with five occasional users, and it looks great. By the time they go into production with a 50-screen application and 200 users, they run into basic performance issues with the database. They pay so much attention to building the GUIs and the SQL statements, they ignore the data modeling and data integrity functions. Failure mode happens after you're committed and far along."

[redacted]

Holiday Inns Worldwide in Atlanta started its pilot client/server project about a year ago, pushing financial reporting data off the mainframe and onto OS/2 servers. "It was an outstanding success as a pilot," says **David Peach**, vice president of finance. "But we decided not to go ahead and implement it."

Why? With Version 1.0 of Dun & Bradstreet Software's SmartStream program, Peach had a tough time keeping financial reporting data on his OS/2 servers in sync with changes to the data on the IBM 3090 host. Changes made to an account on the mainframe were not picked up by the servers.

The IS staff had to fax changes back and forth, enter changes manually at the server or scrap copies altogether and download new data from the mainframe. "We would spend three or four days reconciling any changes we made," he says.

[redacted]

Wayland Systems, Inc. was working with one of its clients, an international manufacturing company, on two large client/server pilot projects.

The aim of both projects was to rebuild the company's entire business systems — order entry, pricing, invoicing and transportation — using Powersoft Corp.'s PowerBuilder, says **David Ruble**, Wayland's senior consulting methodologist. Project B was begun when Project A was approximately three quarters finished.

"Project A started out with 20-MHz 386-based PCs, and it was a performance disaster," Ruble says. "We had a fat client application that was doing most of the data processing, and the server was simply slinging data on demand. Everybody on the project joked that the 386s would make good sea anchors.

"For the second project, we decided 33-MHz 486s were the absolute minimum."

[redacted]

▶ **Edward D. Jones' Rich Malone:** *Worried about version control*

[redacted]

"The developers see so much functionality in all the client/server tools that they want to use it all," Ruble says.

For example, developers working on Project A at the international manufacturing company went wild with PowerBuilder, which enabled them to build very complex graphical user interfaces (GUI) with pull-down and pop-up menus, color and graphics.

Without any guidelines, developers created incompatible screen elements for things such as adding a new entry; removing, deleting and closing a window; and exiting and quitting.

IS got things under control by globally defining many of the windows functions and their appearance using PowerBuilder's object-oriented features, including its "ancestor object," a reusable piece of code that contains all of the functionality for an object.

In the midst of Project A, developers created an ancestor object for a window — its size, the method for opening and closing it, its style. They reused that object in Project B.

"Having something simple like that nailed down saved tons of time," Ruble says. "Project B also cost an order of magnitude less because [IS] could reuse lots of the same people, same code and lots of the data model."

[redacted]

Shaku Atre, president of Atre Associates, Inc., recalls a recent incident in which an insurance company cut over mission-critical applications to a client/server system but could not get technicians, who grew up in the LAN and PC world, to accept the seven-day, 24-hour responsibility of keeping the system up.

"These technicians did not grow up in the mainframe environment and were used to problems that could be dealt with the following morning," Atre says. "They were resisting wearing beepers and being on call, and it was very hard for this insurance company to deal with."

THE CLIENT/SERVER

B.S. Meter

Jim Hobaugh, president of client/server training and consulting company HCS, Inc. in Portland, Ore., learned the hard way that business managers are tired of client/server B.S.

A client had come in to get help implementing client/server technology in its mainframe-centric programming department. Hobaugh started to talk about the basics of client/server – what the idea was, what the company could expect to gain, etc.

"It was at the point of the presentation where I was telling them client/server was about allocating application processing to the hardware component where it makes the most sense, when a senior manager in the company interrupted me. He said, 'We're doing that now – we have a mainframe for processing and stupid 3270 terminals that can do nothing but accept commands and display information. If we take your definition, we're allocating the appropriate application processing to the hardware components that make the most sense right now. What do we need you for?'

"Before I could answer, he said good-bye and the presentation was over. Period. Apparently he had it up to his eyeballs with client/server this and client/server that and was saying to his underlings through me that he wanted to make sure they were already exploiting what they had before they moved on in a costly new direction."

"In client/server, you can overempower users to the point where they screw up your system," says **A. J. Dennis**, research director of workgroup and end-user computing at Technology Investment Strategies Corp. in Framingham, Mass. "In client/server, the actions of one person can affect the whole system."

Dennis was involved in building a client/server application a few years ago using SQL Server. "We didn't realize that when users made changes to data views, we had to assign new access privileges every time," he says. "Permission to use a particular view would be granted to a group of people, but when changes were made to the view by the user, the old view was [obliterated] and a new one created for which no one had permission."

Rich Malone, partner in charge of information processing at brokerage Edward D. Jones & Co. in St. Louis, is in the midst of a project to cut over 2,400 Edward D. Jones branch offices to client/server computing. The firm wants to reduce the overhead on its IBM mainframes and improve response time so brokers in each office get more up-to-date pricing data.

The company has decided to replace its IBM Series 1 front-end processors with IBM RS/6000s. It also plans to retrofit its satellite data network to run TCP/IP and Ethernet.

But the scope of the brokerage's rollout has Malone worried. Because some client/server products are in early, non-robust stages, he may need to make changes in operating systems or applications. Updating to a new version of software or applying a bug fix to all clients or servers will be an enormous task.

"You really have to do your homework before you start a client/server rollout of this size because you can be sure the version numbers of software or the hardware configuration may change between the first client installation and the 2,000th," he says. "We've hit a bunch of walls and U turns." Security and data synchronization issues have caused the firm to postpone its selection of an RDBMS, client and server hardware platforms and operating system. ■

Panepinto is a free-lance writer in Amherst, Mass.

CLIENT/SERVER

Ragtime Revue

Because of the number of platforms and applications client/server development affects, companies will likely do the "multivendor ragtime revue" at least once during the course of a project. This ragtime revue, according to TISC's **A. J. Dennis**, is the dance that occurs between an end-user organization and its many vendors when a bug is found in the client/server system.

"If PowerBuilder is blowing up on a particular SQL statement, it may be PowerBuilder, it may be the server, it may be the SQL flavor you're using or it may be the API," Wayland Systems' Ruble says. "There is a lot of fingerpointing."

Because most of the vendors are involved in just one tiny piece of the overall client/server investment, "their motivation to come out and solve every one of your problems is pretty low," Ruble says.

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UNIX PRIMER

Killing runaways

By Joanne Cummings

"Identifying runaways and killing them — that's one of the biggest challenges for us," says Tim Anderson, network administrator at American Safety Razor Co. in Staunton, Va.

No, there's no need to call *America's Most Wanted*. These runaways are processes such as database searches that, due to faulty programming, work themselves into an endless loop within a Unix system. They're one of the most common culprits of system degradation and a force to reckon with if you want to survive in a Unix environment.

Those charged with Unix management say its multitasking feature is one of the reasons it's difficult to troubleshoot.

Unix treats a runaway process like any other task and permits it to loop endlessly, eating up resources without locking the system up as other systems might.

"It's like your car," Anderson says. "It's better if it just quits on you. Everyone knows how hard it is to find an intermittent problem with your car."

Such problems can be detected by performance monitors, says Tom Stoddard, systems programmer at Jet Electronics and Technology, Inc. in Grand Rapids, Mich., but finding the culprit requires a knowledge of basic Unix commands.

"You need to be very familiar with a command called PS, Process Status, including what syntax arguments are available with it," Anderson says. "It can give you more information about what's going on in your operating system than anything else."

Read the manuals

One of the best ways to learn, besides experience, is through reading. "Ninety-nine percent of the time the answer is in the manuals," says Kurt Lanza, systems manager at Inforonics, Inc. in Littleton, Mass. "If you're new to Unix, sit for a couple of hours and go through the manuals page by page, not for comprehension, but to learn where certain things are addressed. That will save you a lot in the long run."

Some of it may be too technical, however, says Kevin Matthew, network administrator for the city of Bremerton, Wash. "For example, to increase the size of the proc table, you have to find the file that sets the size and recompile the operating system," he says. "Somebody new to the environment might not have the confidence to do that."

Fortunately, Unix automates many administrative processes. If novices are confronted with an error message alerting them to increase the table size, they can usually find a program to take care of it, Matthew says.

"On our system, it's called Tuner. It shows you the current configured size and allows you to change it. Then it goes through the steps of recompiling the operating system and putting it out there for you," he says.

Other problems relate to the complexity of Unix's shell scripts. "In Unix, everything runs from a shell," Stoddard says, "which is very much like the command interpreter for DOS. Shell scripts are analogous to a DOS batch file, and sometimes they can be hard to troubleshoot."

"I've designed shell scripts that I've looked back on after about four or five months, and although I wrote them, I have no idea what I'm doing," Matthew says. "With me, troubleshooting is trial and error. I know what the objective is, and I string a couple of utilities together. If I get the desired results, then I store it and leave it alone."

Cummings is a free-lance writer in Marlboro, Mass.

DEMONIC PRINTERS

Printing is not a trivial task in Unix, and it is surprisingly difficult to troubleshoot.

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"For example, the print spooler does not know that the printer is off-line. It just prints the job and goes off into the other somewhere. And that can happen very easily because in Unix, there's no type of acknowledgment that the printer got the job," says Kevin Matthew, network administrator for the city of Bremerton, Wash.

Heavy load conditions

"In most cases, when a printer goes off-line, it sends an X-off to Unix," Matthew says. "Unix listens for it, turns the X-off and tells the print spooler that it's off-line. That works 99% of the time, but if you have a heavy load, the CPU can't get around to see if an X-off happened."

Configuring printers

"We have two or three kinds of printers," says Kurt Lanza, systems manager at Inforonics. "And we had lots of trouble getting them configured properly. One time we just had the baud rate set wrong for the serial port, but it took some time searching through the manuals to realize the problem."

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The Association of Banyan Users International in Chicago offers seminars and discussions hosted by local chapters. It also hosts a training seminar for Banyan certification. Call (312) 644-6610 to locate a local chapter or for information about starting your own.

By Leslie Goff

NetWare professionals beware. Banyan Systems, Inc. Vines professionals may be serious contenders for your job as companies continue toward client/server and large Novell, Inc. sites struggle to implement NetWare 4.0, which features some network management capabilities that Vines has had all along.

Vines was designed to connect multiple servers and PCs in a variety of locations. It allows users to manage the network remotely over an array of bridges, routers and gateways via a global naming service called StreetTalk. Because Vines was designed from the outset for enterprisewide networks, any experience working with Vines looks good these days.

"If I needed someone to deal with a wide-area network, I would give preference to a Banyan pro with five years' experience over a Novell pro with five years," says Ted Kull, project manager of a Vines network at Educational Testing Service in Princeton, N.J., and chief information officer of the Association of Banyan Users International (ABUI), based in Chicago.

"It's purely statistical that the majority of Novell LANs are local-area networks with multiple servers, but Banyan LANs are geographically dispersed with multiple servers," he adds.

Heterogeneous expertise

The Banyan professional, the logic goes, is likely to be more knowledgeable about heterogeneous networks. Now that Novell has added global naming services to NetWare in 4.0, new opportunities for Banyan pros could emerge.

"Banyan will definitely maintain its market position and maybe even grow," says Steve Huster, information services manager at Southern Mills, Inc. in Union City, Ga. "Right now the outlook for Banyan pros is as good and probably even better than it's ever been."

Banyan says it has some 3,500 customers servicing 2 million end users. Most of these sites — typically government or military organizations or Fortune 500 companies entrenched in enterprisewide computing — congregate along the East and West coasts, with a smattering of customers in between.

Lou Pryor, chairman of the Information Sciences Department at Garland Community College in Hot Springs, Ark., says there is opportunity in the Houston area (with Texaco Oil) and in Dallas (with American Airlines). Washington and Southern California are also hot spots, says Rand Baldwin, executive director of ABUI. "Banyan has a large installed base in areas where you have a lot of governmental or military activity," he says, adding that the U.S. Marine Corps is one of Banyan's largest users.

Employers' requirements for Vines-related jobs are comprehensive. They include a thorough knowledge of the underlying network topology and all network components, as well as prior experience with platforms and protocols including Macintosh, Unix, mainframes, TCP/IP, SNA, AppleTalk, DECnet and NetWare.

Certified Banyan professionals receive preference, users say. Certification is an intensive two-step process that leads first to the designation Certified Banyan Specialist (CBS) and then Certified Banyan Engineer (CBE). A Banyan spokesman says there are 369 CBSs and 235 CBEs.

"Being a certified Banyan engineer sets you apart because it takes a lot of travel, time and money to come by," says Jacquelyn Bonwell, manager of national network technical support at Computervision Services in Phoenix, a third-party maintenance and training provider. "A lot of companies aren't willing to make that expenditure for employees when in reality, it's probably the best way to make sure your support people can take care of your customers."

Goff is a free-lance writer in New York.

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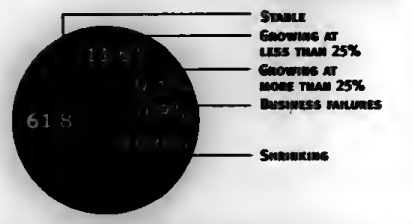

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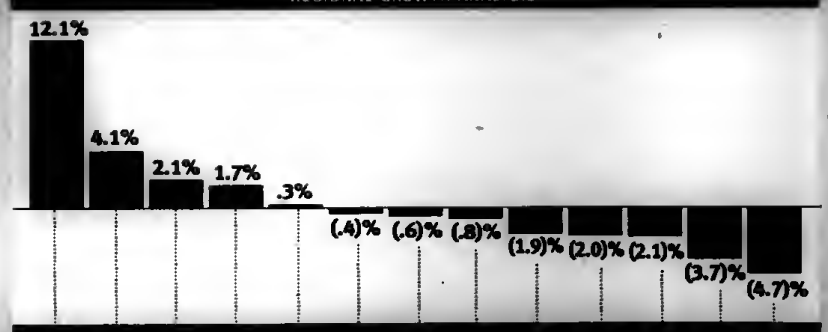
REGIONAL GROWTH ANALYSIS



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CorpTech, a directory publisher in Woburn, Mass., tracks the U.S.' 35,000 technology manufacturers. This survey relates to the 24,585 tracked firms with less than 1,000 employees.

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By Alice Bredin

WHEN CHAMPION International Corp. wanted to know how its data center could run more efficiently, it decided to benchmark its operations. The final analysis showed its laser printing volume was too high for the company's size and recommended an alternative that cut expenses by $250,000.

"Before the year was out, we had saved the money we spent on the study and kept saving," says Tom Walsh, MIS director of network services at the Hamilton, Ohio, paper manufacturer.

It took six weeks to fill out the surveys supplied by Compass America, Inc., the Reston, Va., firm hired for the job. Compass, a management consultancy specializing in information technology benchmarking, analyzed data on approximately 800 different metrics at a cost of $54,000.

There are no figures for the number of companies benchmarking, but experts say the process is gaining ground. "IS is perceived as a cost center, not always a value-added center," says Bill Krenek, senior consultant at the International Benchmark Clearinghouse, a group of 200 organizations that share benchmarking information via a network. "IS departments are looking for a way to turn that around."

Measuring the benefits

Instead of examining the efficiency of information systems infrastructures, companies are measuring the benefits offered by IS. "It used to be, 'How fast do coders code?' Now people want to know how well IS professionals satisfy customers and support business problems," says Kaye MacKenzie, information management and technology quality program manager at Digital Equipment Corp. in Maynard, Mass. According to Krenek, companies most commonly want to benchmark a number of items: how well IS links its strategies to corporate plans; the kinds of measurements used by other IS departments that gauge productivity, such as customer satisfaction and coding speed; application development and support; and migration from mainframes to distributed processing.

SOME BENCHMARKING COMPANIES have databases that contain data from European data centers. While some IS managers feel there is nothing wrong with this data, it may be a concern for your management.

For the past seven years, Xerox Corp. has done most of its own benchmarking. While it has hired third-party benchmarking firms in the past, Sharon Welch, manager of global compute services, says the company learns more from its own studies, which involve sending a team to other companies to observe IS solutions. The same is true for Eastman Kodak Co., which hires consultants to pick companies with the best IS solutions and investigate them on their own, says Jeff Duell, Kodak's technology leader for IS measurement and benchmarking.

When choosing companies for comparison, experts say thoroughness is important. "Have an intern do a periodical search to find companies beyond the usual suspects," says Toby Choate, vice president of information technology consulting at Arthur D. Little, Inc. in Cambridge, Mass. "A lot of the usual suspects have marketing people who market their IT prowess, but these companies may not be doing a lot."

But even with extensive research, you're bound to make mistakes. When Welch began, she says, her biggest mistake was benchmarking just to prove that her department was doing things right. After her first benchmark, she spent a year trying to prove that the data, which showed that some other IS departments were outperforming hers, was wrong.

"Once we started listening, we found out how much we could learn," she says. "Now we don't want to benchmark against a company unless we know they'll blow us away."

Bredin is a free-lance writer in New York.

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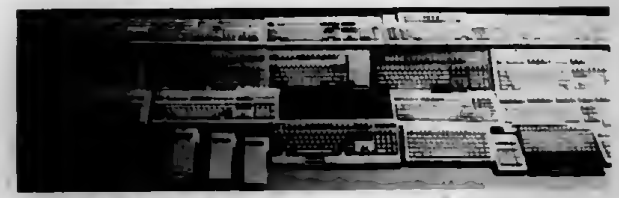

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Gainers / Losers

Percent

Gainers		Losers	
Lattice Semiconductor (H)	29.3	Data Race Inc. (L)	-25.6
Trimeic Corp.	20.0	Quarterdeck Office Sys. (L)	-17.4
Gandalf Technologies Inc.	18.9	Sun Microsystems Inc.	-17.0
Data Switch Corp.	18.8	Radius Inc.	-16.7
Data General Corp.	16.0	Group 1 Software	-15.8
Meca Software	15.8	Advanced Micro Devices	-14.8
Proteon Inc.	15.4	Micron Technology (H)	-14.7
Intelligent Electronics (H)	15.0	State of the Art	-14.0

Dollar

Gainers		Losers	
Lattice Semiconductor (H)	5.13	Micron Technology (H)	-9.33
Progress Software Corp.	5.00	Sun Microsystems Inc.	-4.50
Intel Corp. (H)	4.75	Cabletron Systems	-4.50
Platinum Software (H)	3.75	Advanced Micro Devices	-4.38
Centigram Communications	3.38	Texas Instruments	-4.25
Intelligent Electronics (H)	3.00	CompUSA Inc.	-3.75
Parallan Computer	3.00	Atmel Corp. (H)	-3.38
Parametric Technology	2.50	Autodesk Inc.	-3.25

Manugistics shines forth

One of the newest rising technology stars on Wall Street is Manugistics Group, Inc. (MANU).

Manugistics went public on Aug. 13. Having picked up Buy recommendations from underwriters Alex. Brown & Sons, Inc. and Robertson, Stephens & Co., the stock jumped as high as 16 last week after its initial public offering at 10.

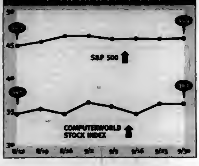
Manugistics creates "supply-chain management" software, which coordinates all aspects of supply chain operation for manufacturers and retailers. The software tracks raw goods acquisition, transportation needs and manufacturing and distribution procedures.

The company is positioned to take advantage of shifting relationships in the retail industry as retailers continue to streamline delivery schedules and put more of the onus of inventory management on the manufacturers.

Manugistics faces competition from software suppliers that offer packages in various segments of the market, including American Software, Inc. (AMSWA) and Marcam Corp. (MCAM). However, no other company offers the same level of enterprisewide integration, according to Robert George, an analyst at Advanced Manufacturing Research, Inc. in Boston.

Other pluses for Manugistics include support for client/server platforms (Unix and OS/2) and mainframes, as well as plenty of room to grow in overseas markets, which currently account for about 15% of the company's revenue.

Manugistics' challenge for the immediate future will be to continue to port its modules to the client/server environment, George said. *—Derek Slater*



Exch	52-Week Range			Oct. 1 3pm	Wk Net Change	Wk Pct Change
OTC	40.00	15.63	3COM Corp.	29.75	-0.50	-1.7
NYS	91.13	63.50	American Info Techs Corp.	85.88	0.88	1.0
NYS	65.00	40.63	AT&T	58.75	-0.50	-0.8
OTC	4.06	0.75	Artel Communication Corp	3.13	0.06	2.0
OTC	24.50	12.50	Banyan Systems Inc.	16.50	2.50	-12.6
NYS	64.88	44.50	Bell Atlantic Corp	63.50	1.88	3.6
NYS	62.88	46.75	Bellsouth Corp	60.65	0.38	0.6
NYS	14.75	3.63	Bolt, Beranek & Newman	9.50	1.00	9.5
OTC	18.50	9.50	Brooktrout Technology	12.50	0.38	3.1
NYS	119.00	56.63	Cabletron Systems	103.00	-4.50	-4.2
OTC	55.00	6.63	Centigram Communications	32.75	3.38	31.5
OTC	55.50	20.75	Chipcom Corp	53.50	0.50	0.7
OTC	59.75	26.00	Cisco Systems Inc	49.75	1.25	2.6
OTC	16.38	5.50	Compression Labs Inc	14.00	-0.15	-0.9
OTC	36.00	17.00	CrossComm	26.13	2.13	7.5
OTC	4.65	1.63	Data Switch Corp	2.38	0.38	18.8
NYS	19.88	12.38	Digital Comm. Assoc.	18.75	-0.25	-1.3
OTC	12.75	3.75	Digital Systems Int'l Inc.	4.00	-0.50	-13.3
OTC	67.88	11.13	DSC Communications	61.75	0.25	0.4
OTC	9.50	6.75	Fibronic Int'l Inc.	6.58	0.65	10.9
OTC	24.00	8.75	Filenet Corp	14.75	-0.50	-3.4
OTC	6.38	1.50	Gandalf Technologies Inc.	2.75	0.44	18.9
OTC	2.06	0.75	Gateway Communications	0.88	0.06	7.6
NYS	15.75	3.58	General Datacomm Inds.	10.75	-0.75	-6.5
ASE	3.75	2.00	Go Video	2.50	0.00	0.0
NYS	39.00	32.50	GTE Corp	38.00	-0.25	-0.7
NYS	94.75	63.25	ITT Corp	93.75	1.38	1.5
OTC	29.88	16.81	MCI Communications Corp.	27.88	0.63	2.3
OTC	6.50	1.50	Microcom Inc.	5.00	0.58	16.3
OTC	24.25	3.50	Netrix Corp.	4.50	0.25	5.9
OTC	19.00	6.50	Network Computing Devices	7.00	-0.25	-3.4
NYS	15.00	5.38	Network Equipment Tech	7.88	-0.25	-3.1
OTC	20.13	8.00	Network General	13.75	0.63	5.0
OTC	15.75	8.88	Network Systems Corp	8.25	0.75	10.0
OTC	73.88	8.94	Newbridge Networks Corp	66.13	-2.75	-4.0
NYS	46.00	21.38	Northern Telecom Ltd.	24.00	-1.00	-4.0
OTC	35.25	17.00	Novell Inc. (L)	18.63	1.13	6.4
NYS	48.88	39.50	Nynex Corp	46.13	-0.13	-0.3
OTC	30.00	14.50	Octel Communications Corp.	23.50	1.25	5.6
OTC	6.13	3.58	Penril Data Comm Networks	6.75	0.13	3.0
OTC	30.50	12.50	Picturetel Corp.	17.50	-0.50	2.8
OTC	11.50	3.63	Proteon Inc.	5.63	0.75	15.4
NYS	37.88	17.50	Scientific Atlanta Inc.	34.50	-1.75	-3.5
NYS	47.00	31.75	Southwestern Bell Corp.	43.63	1.75	4.2
NYS	57.38	23.38	Sprint Corp	37.00	0.13	0.3
OTC	27.00	12.50	Standard Microsystems Corp	25.00	-0.15	-0.5
OTC	18.50	9.25	Stratacom Inc.	14.00	1.50	12.0
OTC	42.75	12.84	Synoptics Communications	24.75	-0.75	-3.0
OTC	7.75	2.88	Telebit Corp. (H)	7.00	0.38	5.7
OTC	17.88	2.63	Telematics Int'l Inc. (H)	15.38	-0.25	-1.6
OTC	34.75	15.25	US Robotics (H)	34.75	1.25	3.7
NYS	40.25	35.25	US West Inc. (H)	49.25	1.75	3.7
OTC	56.00	19.50	Wellfleet Communications	46.75	-2.00	-4.1
OTC	39.50	7.75	Xircom	17.75	0.75	6.6

Exch	52-Week Range			Oct. 1 3pm	Wk Net Change	Wk Pct Change
OTC	5.56	2.50	Advanced Logic Research	3.75	0.38	13.0
OTC	65.25	22.50	Apple Computer Inc.	22.50	-2.58	-9.5
OTC	24.75	12.75	AST Research Inc.	16.00	-0.15	-0.7
NYS	9.25	2.50	Commodore Int'l	3.75	0.00	0.0
NYS	61.75	51.00	Compaq Computer Corp	57.63	-1.65	-2.7
OTC	49.88	13.50	Dell Computer Corp.	16.50	-0.58	-2.2
NYS	88.25	50.75	Hewlett Packard Co.	68.75	-0.75	-0.6
NYS	42.63	17.63	Silicon Graphics (H)	42.63	1.88	4.6
OTC	61.00	22.00	Sun Microsystems Inc.	22.00	-4.50	-17.0
NYS	37.75	24.63	Tandy Corp. (H)	37.75	1.50	3.6
OTC	7.00	3.63	Zeos International Ltd	2.63	-0.25	-8.7

Exch	52-Week Range			Oct. 1 3pm	Wk Net Change	Wk Pct Change
ASE	9.38	4.50	Amdahl Corp	6.00	0.13	2.1
NYS	8.75	3.65	Convex Computer	5.25	-0.13	-2.3
OTC	6.13	2.25	Cray Computer	4.75	-0.13	-2.9
NYS	30.88	19.00	Cray Research Inc.	24.50	0.75	3.2
NYS	13.88	7.75	Data General Corp	10.58	1.50	16.0
NYS	49.25	30.38	Digital Equipment Corp	36.75	1.63	-4.2
NYS	44.00	28.75	Harris Corp	42.88	1.00	2.4
NYS	80.38	40.65	IBM	43.13	1.50	3.6
OTC	25.75	5.50	Kendall Square Research	24.00	2.00	9.1
NYS	341.50	83.00	Matsushita Electronics	136.00	1.50	1.1
OTC	23.75	8.25	NetFrame	15.63	-0.38	-2.3
OTC	24.25	9.25	Parallan Computer	24.25	3.00	14.1
OTC	23.25	8.00	Pyramid Technology	21.50	1.50	2.5
OTC	24.00	11.75	Sequent Computer Sys.	35.50	0.50	3.3
OTC	5.50	1.58	Sequoia Systems Inc.	2.88	0.58	15.0
NYS	41.75	20.25	Stratus Computer Inc	24.75	-0.88	-3.5
NYS	16.88	8.50	Tandem Computers Inc	17.75	0.38	3.2
OTC	23.50	10.65	TriCord Systems	21.00	1.00	5.0
NYS	13.88	7.75	Unisys Corp	12.13	0.38	3.2

Exch	52-Week Range			Oct. 1 3pm	Wk Net Change	Wk Pct Change
OTC	37.00	12.63	Adobe Systems Inc.	18.50	0.00	0.0
OTC	21.00	10.25	Aldus Corp. (H)	19.50	-0.75	-3.2
OTC	11.25	5.50	American Software Inc.	6.88	-0.25	-3.5
OTC	28.13	9.50	Ask Computer Systems	12.25	0.88	7.7
OTC	56.75	56.75	Autodesk Inc.	44.75	-3.25	-6.8
OTC	7.75	2.50	Bachman Info. Systems	3.58	-0.13	-3.0
OTC	43.00	24.75	BGS Systems Inc. (L)	25.50	0.75	3.0
OTC	84.13	38.75	BMC Software Inc	58.25	-2.25	-3.7
OTC	28.25	18.00	Boole & Babbage	24.75	-0.13	-0.5
OTC	39.75	12.75	Borland Int'l Inc.	15.00	0.75	1.7
OTC	5.00	2.75	CE Software	3.63	0.13	3.4
ASE	40.25	11.16	Cheyenne Software Inc.	33.00	2.25	7.3
OTC	19.50	8.25	ChipSoft	14.75	1.50	11.3
OTC	8.88	5.63	Cognos Inc.	7.63	0.15	1.7
NYS	55.58	14.50	Computer Associates (H)	32.88	0.50	1.2
NYS	7.00	2.75	Computervision Corp	3.13	0.15	4.2
OTC	34.75	19.25	Compuware Corp	23.00	0.63	2.8
OTC	14.75	5.75	Comshare Inc.	10.00	0.75	8.1
OTC	52.25	18.75	Corel Corp. (H)	30.50	-0.50	-1.6
OTC	15.75	5.00	Easel Corp	6.13	-0.13	-2.0
OTC	25.25	17.00	4th Dimension	21.13	4.25	1.2
OTC	19.25	5.25	Frame Technology	7.50	-0.25	-3.2
OTC	17.50	8.00	Group 1 Software	8.00	-1.50	-15.8
OTC	35.25	18.00	Gupta	15.50	0.50	3.5
OTC	11.50	4.50	Hogan Systems Inc.	11.50	0.00	0.0
OTC	25.75	11.25	IMRS	19.75	2.38	13.7
OTC	44.75	24.75	Information Resources	40.00	0.25	0.6
OTC	27.25	10.50	Informix Corp	25.63	1.88	8.6
OTC	14.50	8.50	Intergraph Corp	10.38	0.58	3.8
OTC	53.63	5.88	Interleaf Inc.	6.15	-0.58	-5.8
OTC	16.50	4.75	Intersolv Inc.	9.25	1.00	12.1
OTC	16.00	7.75	Knowledgeware Inc.	11.00	0.25	2.3
OTC	54.75	15.50	Legent Corp.	21.50	0.50	2.4
OTC	46.50	14.75	Lotus Development (H)	45.25	1.50	3.4
OTC	23.00	4.25	MathSoft	6.50	-0.13	-1.9
OTC	25.25	4.50	McAfee Associates	8.15	-0.58	-4.4
OTC	11.63	2.50	Meca Software	5.50	0.75	15.8
OTC	12.00	5.75	Mentor Graphics	10.63	-0.13	-1.2
OTC	46.00	26.25	Micro Focus	26.88	0.15	0.5
OTC	13.23	4.38	Micrografx Inc.	7.50	-0.25	-3.2
OTC	98.00	70.58	Microsoft Corp.	82.75	2.50	3.3
OTC	60.63	18.63	Oracle Corp. (H)	60.63	1.88	3.2
OTC	40.75	21.50	Parametric Technology	40.25	2.50	6.6
OTC	40.50	22.50	Peoplesoft	36.75	1.75	5.0
OTC	7.13	3.75	Phoenix Technologies	4.00	0.00	0.0
OTC	40.00	22.00	Powersoft	29.25	-0.75	-2.5
OTC	34.00	11.34	Platinum Software (H)	34.00	3.75	12.4
OTC	25.00	8.75	Platinum Technology (L)	10.00	0.75	8.1
OTC	61.50	32.25	Progress Software Corp	58.50	5.00	9.3
OTC	7.38	2.38	Quarterdeck Office Sys. (L)	2.58	-0.50	-17.4
OTC	32.00	55.75	Rainbow Technologies Inc.	24.00	0.75	3.2
OTC	11.58	4.25	Rasterops	8.63	-0.50	-5.5
OTC	15.25	3.63	Ross Systems	12.88	0.88	7.3
OTC	28.75	8.65	Sapiens Intl. Corp. N.V.	25.25	-1.65	-6.0
OTC	14.50	5.50	Software Publishing Corp	6.00	-0.25	-4.0
OTC	14.25	3.65	Software Toolworks Inc.	13.38	0.65	4.9
OTC	2.75	0.75	Spinnaker Software	1.56	-0.08	-3.8
OTC	19.75	3.58	State of the Art	9.75	1.50	-14.0
NYS	24.63	15.00	Sterling Software Inc.	24.25	2.00	9.0
OTC	21.63	8.00	Struct. Dynamics Research	14.00	-1.50	-9.7
OTC	77.50	32.75	Sybase Inc.	65.00	-0.75	-1.1
OTC	20.50	5.88	Symantec Corp. (H)	19.13	-0.88	-4.0
OTC	25.50	10.00	System Software Assoc.	16.25	-0.75	-4.4
OTC	6.38	2.75	Trimeic Corp.	5.25	0.88	20.0
OTC	24.75	11.75	ViewLogic Systems	24.75	1.50	6.5
OTC	23.50	5.50	Walker Interactive Systems	6.63	0.38	6.0
OTC	3.19	1.00	Wordstar	1.19	0.08	5.6

Exch	52-Week Range			Oct. 1 3pm	Wk Net Change	Wk Pct Change
NYS	32.88	10.75	Advanced Micro Devices	25.88	6.50	14.8
NYS	28.00	9.75	Analog Devices Inc. (H)	27.00	0.00	0.0
OTC	38.65	10.50	Atmel Corp. (H)	34.63	3.58	-8.9
OTC	6.25	2.75	Chips and Technologies	5.50	0.13	2.3
OTC	39.75	15.00	Cirrus Logic	32.13	-0.75	-2.5
NYS	16.75	7.88	Cypress Semiconductor Corp	13.88	1.15	8.8
NYS	19.00	10.38	Dallas Semiconductor	18.88	0.50	2.7
OTC	75.00	30.58	Intel Corp. (H)	73.00	4.75	7.0
NYS	39.25	5.38	LSI Logic Corp	16.63	-1.13	-6.5
OTC	26.75	11.66	Lattice Semiconductor (H)	22.65	5.13	29.3
NYS	63.63	15.65	Micron Technology (H)	52.88	-9.33	-14.7
NYS	105.13	43.58	Motorola Inc. (H)	100.00	0.63	0.8
NYS	21.75	10.13	National Semiconductor (H)	20.58	-0.75	-1.2
OTC	55.75	6.50	Sierra Semiconductor	4.25	0.58	4.8
OTC	51.75	25.50	SynOpsys	47.00	2.00	-4.1
NYS	84.75	39.00	Texas Instruments	74.50	-4.25	-5.4
OTC	18.88	6.50	VLSI Technology (H)	17.15	-1.13	-6.2
OTC	16.38	3.00	Weitek (H)	12.15	-1.88	-13.4
ASE	9.63	3.63	Western Digital Corp	5.15	0.33	2.5
OTC	52.75	34.50	Xilinx (H)	46.75	-0.63	-1.3
OTC	37.50	18.00	Zilog Inc. (H)	35.00	-0.13	-0.4

Exch	52-Week Range			Oct. 1 3pm	Wk Net Change	Wk Pct Change
OTC	24.00	7.88	American Power Conversion	22.00	0.16	2.6
OTC	22.75	15.50	Banctec Inc. (H)	20.75	-1.00	-4.6
OTC	10.00	3.50	Cambex Corp.	4.00	0.00	0.0
ASE	18.38	5.88	Cognitronics Corp.	6.75	0.00	0.0
NYS	25.50	9.00	Conner Peripherals	30.00	-0.25	-2.4
OTC	38.50	15.50	Creative Technologies Inc.	22.00	1.25	8.0
OTC	50.75	8.00	Data Race Inc. (L)	8.00	-2.75	-25.6
ASE	13.75	4.75	Dataram Corp.	9.75	3.25	54.7
NYS	38.00	6.00	EMC Corp. (H)	36.58	-0.25	-0.7
OTC	10.50	5.75	Emulex Corp.	6.65	4.25	3.8
OTC	19.00	13.25	Evans & Sutherland	17.50	0.00	0.0
OTC	20.63	7.50	Exabyte	10.50	0.88	9.1
OTC	34.00	9.13	Intelligent Info. Systems	26.00	0.00	0.0
OTC	8.88	2.38	Iomega Corp	2.88	-0.13	-4.3
OTC	14.25	5.75	IPL Systems Inc.	7.50	-0.25	-3.2
OTC	24.00	54.25	Komag Inc.	16.25	-0.50	-3.0
OTC	10.65	6.38	Maxtor Corp.	5.19	-0.25	-4.7
OTC	10.00	5.75	Micropolis Corp.	6.75	0.13	1.8
NYS	317.00	97.00	3M Corp	102.75	0.00	0.0
OTC	7.75	4.00	Printronix Inc.	7.25	-0.50	-6.5
NYS	17.25	6.88	QMS Inc.	8.15	-0.13	-1.6
OTC	17.88	9.50	Quantum Corp.	11.50	0.63	5.7
OTC	7.13	3.13	Radius Inc.	3.75	-0.75	-16.7
NYS	16.88	9.33	Recognition Equipment	16.38	0.50	3.1
OTC	13.88	3.75	Rexon Inc.	4.15	0.00	0.0
OTC	22.38	32.00	Seagate Technology	17.50	-1.00	-5.4
NYS	45.00	18.00	Storage Technology	27.25	1.63	6.3
NYS	27.88	17.63	Tektronix Inc.	23.88	-0.50	-2.1
NYS	88.88	70.13	Xerox Corp.	73.38	1.13	1.6

Exch	52-Week Range			Oct. 1 3pm	Wk Net Change	Wk Pct Change
OTC*	23.75*	14.88*	American Mgmt. Systems	17.50	1.00	6.1
NYS	4.75	2.38	Anacomp Inc.	5.00	0.00	0.0
OTC	23.83	11.83	Analysts Int'l (L)	21.00	0.17	0.8
NYS	56.13	44.63	Auto Data Processing	49.75	1.58	-2.7
NYS	18.38	13.00	Ceridian Corp. (H)	18.13	0.25	5.4
NYS	17.63	13.15	Comdisco Inc.	17.63	1.75	11.0
OTC	11.50	4.50	Computer Horizons	11.50	1.00	0.5
NYS	94.88	65.88	Computer Sciences (H)	92.00	0.50	0.5
NYS	9.75	8.00	Computer Task Group	7.00	0.00	0.0
NYS	40.50	19.00	CompUSA Inc.	27.58	-3.75	-12.8
OTC	14.75	7.00	Corporate Software	11.58	0.75	2.2
OTC	12.75	6.63	Egghead Discount Software	6.88	-0.13	-1.8
NYS	55.88	26.00	General Motors E (EDS)	28.63	-3.00	-9.5
OTC	25.50	10.50	Inacom Corp	17.50	1.50	9.4
OTC	23.00	8.13	Intelligent Electronics (H)	25.00	3.00	15.0
OTC	16.50	7.15	Merisel (H)	14.38	-0.75	-5.0
OTC	24.50	5.75	Michnage Inc.	24.50	2.50	11.4
OTC	33.50	39.16	Paychex	25.50	1.50	4.7
NYS	87.25	21.63	Policy Management Sys.	26.85	0.00	0.0
NYS	43.63	20.75	Reynolds and Reynolds	40.25	0.63	1.6
OTC	20.00	12.15	SEI Corp. (H)	19.50	1.00	5.4
OTC	24.50	17.50	Shared Medical Systems	24.50	2.00	8.9
OTC	12.65	5.75	SHL Systemhouse	9.63	-0.15	-1.3
OTC	50.75	20.00	Software Spectrum Inc.	25.50	0.25	1.0
OTC	40.75	23.75	Sungard Data Systems	39.00	-0.75	-1.9
NYS	4.38	1.13	Ultimate Corp	3.38	0.00	0.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Briefs

Exec sues Apple

Apple Computer, Inc. is being sued by former Vice President and Secretary Albert A. Eisenstat, 68, who left the company two weeks ago and resigned his board seat. According to Apple, Eisenstat is suing the company and its chief executive officer, Michael Spindler, "in a dispute over compensation related to his departure from the company." Apple said in a statement that the charges are without merit.

McAfee nixes deal

McAfee Associates, Inc. has broken off its acquisition discussions with ButtonWare, Inc., a database developer from Bellevue, Wash. No reason was given for the termination of the planned purchase, which was announced by the Santa Clara, Calif.-based McAfee in July. Despite the setback, McAfee officials said they hope to continue to diversify their product line beyond their current antivirus and utility software offerings.

Northgate woes wax

Northgate Computer Systems, Inc. announced that severe cash-flow problems hurt sales during its third quarter, which ended Sept. 30. That, combined with losses arising from a decision by the company's landlord to call in a $1.5 million letter of credit and terminate a building lease, will lead to a "substantial loss" in the third quarter, according to Northgate. The direct marketer of PCs plans to move to a smaller facility.

SHORT TAKES AST Research, Inc. of Irvine, Calif., sold its 5250 emulation board business for $525,000 to Micro-Integration Corp. of Cumberland, Md. . . . Goree Enterprises, Inc. has agreed to buy Applicon, Inc., a CAD/CAM software supplier, from Schlumberger Ltd. . . . FTP Software, Inc. has filed a registration for an initial public offering.

Router, hub markets mix and merge

By Joanie M. Wexler

Further evidence of consolidation in the networking industry surfaced last week in the form of two acquisitions that pool smart hub and routing technology.

After weeks of rumors, hub market leader SynOptics Communications, Inc. bought high-end router start-up Coral Networks, Inc. in Marlboro, Mass., for $15.2 million. Coral has already been integrated into SynOptics under the SynOptics name.

Meanwhile, router and channel extension equipment maker Network Systems Corp. moved to buy hub company Bytex Corp. for $47 million.

The activity signals a shift toward bundling many diverse communications functions, including cabling, routing and LAN switching, into a single backbone box to accommodate growing, complex corporate networks and to aid the survival of smaller vendors.

SynOptics' purchase of Coral will help infuse cash into the 45-person router company that is perennially in search of financial backing despite its technical advantage of making the most fault-tolerant router on the market.

Stake in the neighborhood

Both SynOptics and Network Systems said they want to maintain an East Coast presence; acquisitions Coral and Bytex will thus remain in their Massachusetts locations.

The timing was impeccable: SynOptics' announcement of a high-end "network center" hub last week was criticized for not sporting integrated routing (see story page 12). SynOptics has now revealed plans to bundle Coral's routing technology "across our entire product line and possibly in a stand-alone product for remote office applications" in 1994, said Bill Lanfri, vice president of technology systems marketing.

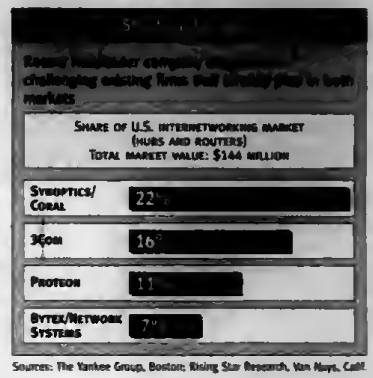
With its Bytex acquisition, Network Systems is also eyeing the backbone market, said Warren Pillsbury, vice president of marketing at Network Systems in Minneapolis. "A high-end intelligent hub is essential to that strategy."

Paul Deninger, managing director at Broadview Associates, L.P., the Fort Lee, N.J., investment banking firm that engineered the Network Systems/Bytex deal, noted, "While people referring to backbones today usually mean networks built on bridges and routers, there is an argument that hubs will become the backbones and routers will be inside them."

While profitable, Network Systems's $2.3 million net income for its fiscal 1993 quarter ended June 30 was a downturn from the $3.7 million figure of the same quarter the previous year. Bytex lost $1.4 million during its three months ended June 30 this year, compared with a net income of $96 million for the same period the previous year.

"Every day, Bytex had to fight the question, 'Are you going to be around tomorrow?'" said Deninger — a situation that makes it almost impossible for a vendor to rebound.

However, Bytex President Art Carr said now "customers will have greater assurance of the financial viability of Bytex." He said the merger of the two firms' largely direct distribution channels should also help each gain sales momentum.



Sources: The Yankee Group, Boston; Rising Star Research, Van Nuys, Calif.

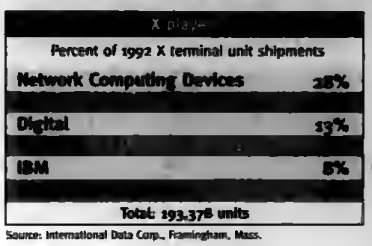
X market gains speed

By Jean S. Bozman

The X terminal market is heating up, with competing product announcements from Hewlett-Packard Co., IBM, and Tektronix, Inc. in recent weeks that set new price/performance levels.

The flurry of activity caps a year of rising X terminal shipments, industry analysts said, driven by lower costs and the need for centralized management of Unix applications.

Increased competition in the U.S. market stems, in part, from slow sales in Europe this year, said Eileen O'Brien, director of the terminals program at International Data Corp. in Framingham, Mass. However, the potential for an overheated market still exists. "The pricing of the components will come down," she said, "but it could reach the point where vendors cannot make money, and all they'll be doing is buying market share."



Source: International Data Corp., Framingham, Mass.

Users and analysts noted an interest in using X terminals as a way to reduce the cost of computing. "It's the distributed version of the IBM 3270," said Judith Hurwitz, president of the Hurwitz Consulting Group in Watertown, Mass. "People don't want to put an [Intel] 486 or a workstation on everybody's desktop." Analysts also noted vendor support for both Microsoft Corp.'s Windows NT and Unix applications, allowing users to access Windows NT and Unix servers simultaneously and to transfer data between them.

X terminals are becoming a larger fraction of the total population of desktop devices at many sites, some users reported. "Workstations still outnumber X terminals by 10 to 1, but the ratio of X terminals to workstations is increasing," said Mark Anderson, a computer scientist at Argonne National Laboratory in Argonne, Ill., near Chicago.

And, since X terminals display applications that are running on centralized servers, they also simplify information systems tasks, users said. "They are easier to manage [than workstations], and they do not have significant license or support costs associated with them because the software is on the server," Anderson said. Meanwhile, intense competition between vendors has reduced the differences between vendors' products in terms of specific features, he said.

Several vendors made announcements this fall:

- Hewlett-Packard Co. replaced its entire X terminal line with a line of Envizex terminals that support multimedia applications. HP will sell users terminals, ranging in price from $1,995 to $4,995 and provide trade-in credits for old ones.
- Tektronix is expected to announce this week a new line of low-end X terminals, called the TekXpress XP100 Series, with prices that range from $1,395 to $4,695, depending on monitor size and configuration.
- IBM announced the Model 140 series of X terminals at the Unix Expo conference in New York, overlapping with the low-end Model 130 and complementing the high-end Model 150 line, analysts said. Prices for the Model 140 line range from $2,800 to $4,800 based on display size and features.

Wysiwyg

What were You doing 10 years ago TODAY?

IN 1983

Other facts...

- Scott McNealy was just about to take over as president of Sun Microsystems, Inc. The company released a 32-bit engineering-oriented workstation/processor based on Motorola's 68000 microprocessor.
- The AT&T monopoly was reaching the end of its life.
- IBM shipped 800,000 PCs.
- Users spent $200 million on micro-mainframe communications hardware and software.

...and events

I was in charge of our microprocessors at Intel. We were busily working with IBM on developing the 286-based PC AT and had started developing the 32-bit Intel 386 microprocessor. Our projections for the 386 microprocessor were to sell over 1 million during its lifetime. We exceeded projections and sold more than 1 million in one month.

David House
Senior Vice President/Corporate Strategy
Intel Corp., Santa Clara, Calif.

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The 5th Wave *by* Rich Tennant

"WE SHOULD HAVE THIS FIXED IN VERSION 2."

Inside Lines

Playing it safe

Sources close to IBM last week said Big Blue has decided not to make a grandiose rollout to eagerly anticipated Parallel Server in mid-October. Instead, IBM plans to meet privately with large customers to describe the product and its capabilities, along with pricing and availability. One source who requested anonymity said IBM's change of heart does not in any way reflect development delays for the parallel server. In fact, the machine is ready and was demonstrated at a conference IBM held last week in Phoenix for CIOs, though it's still not clear when the system will ship. The source said IBM has not yet completed analyzing the size and scope of performance workloads that the machine can handle.

Expect a full house

The House Subcommittee on Economic and Commercial Law has tentatively scheduled a hearing on Oct. 13 to look into some of the competitive practices among major players in the computer industry. However, sources said the subcommittee has specifically requested testimony on Novell and Microsoft, which own prodigious market shares in the operating system and network operating system markets, respectively. Sources said the questions regarding the quasi-monopoly positions of both companies will be discussed. The subcommittee has jurisdiction over matters of antitrust, bankruptcy, commercial law and economic regulation. Spokespeople for both Microsoft and Novell said they were not aware of the tentatively scheduled meeting or its agenda.

Closing the loop

Novell will announce the back end, or NetWare server component, of its NetWare Connect remote LAN access product this week, through its partner Cytrix. The small company sells software that allows a range of clients to run applications entirely on a 486 server, either from the LAN or from the road. The two companies will provide remote software that runs on NetWare Connect and lets users on the road run jobs on a NetWare server.

Next Step for NCR?

NCR will soon announce plans to run Next Computer's NextStep operating system on its NCR System 3000 servers. An NCR executive said the move would be a boon for NCR System 3000 users who have expressed interest in the object-oriented operating environment. One such user is Chrysler Financial, a division of Chrysler Corp., which recently rolled out 113 NCR 3445 servers in its credit branches across the U.S. and Canada. Since Chrysler's Goldstar Technology PCs currently run NextStep, sources said the auto maker's financial services division would like to extend the operating environment to its server.

Does the label say "Unix inside"?

SunSoft President Ed Zander says Unix analysts unfairly labeled him a major force of resistance to a plan to let the X/Open Co. put a trademark on Novell's Unix System V brand name [CW, Sept. 27]. But Zander made clear last week that he would rather have the X/Open trademark on SunSoft's Solaris software say Unix and not Novell's UnixWare label. "That box will say 'Unix inside,'" he said. "My goal with Solaris is to beat UnixWare." Zander said he has conferred with Kanwal Rekhi, executive vice president of Novell's Unix Systems Group, and now believes a resolution to the X/Open trademark issue will come soon.

Although Lotus currently has no plans to offer a runtime version of Notes, Jeff Papows, vice president of the Notes division, said the company will offer a runtime version of the Notebook application development environment it plans to deliver next year. This will allow sites to build applications that can then be distributed at a lower cost on multiple nodes running Notes. While this won't reduce the actual cost of Notes itself, it should reduce the cost of application development in Notes. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8545.

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